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ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES
BRISTOL BAY AREA

ANNUAL MANAGEMENT REPORT

- 1967 -

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ALASKA DEPARTMENT OF FISH AND GAME

MINEO #1

Total Salmon Pack to Date, Bristol Bay Area, Week Ending Final 8/27 1967

(No. of 48 - 1 pound cases for canneries)
(No. or pounds of fish for freezer plants)

Name of company	Kings	Reds	Cohos	Pinks	Chums	TOTAL
Alaska Packers Assoc.	397	79,761		2	3,098	83,258
Bering Sea Processors	45	3,723	84		1,123	4,975
Briggs-Way	1	15				16
Bumble Bee Seafoods	165	37,123			2,375	39,663
Columbia Wards Fish.	9,750	29,485	504		14,018	53,757
Kayak Packing Co.	20	6,481			81	6,582
Nelbro Packing Co.	257	38,548			1,017	39,822
New England Fish Co.	274	52,519			665	53,458
Pacific Alaska Fish.	5,093	20,627	268	1	13,801	39,790
Queen Fisheries	31	60	2,476		517	3,084
Red Salmon Company	1,149	58,759			4,524	64,432
Togiak Fisheries	2,374	7,265	26	5	4,226	13,896
TOTALS	19,556	334,366	3,358	8	45,445	402,733
Alaska Smokey Joe's	4,145		12,490		152	16,787
*Bristol Bay Processor	34	762			12	808
*Clark Fishing & Pack		848				848
*Leland Daniels	3,513					3,513
*Mickie Jones	822	27,023	45		6,100	33,990
*Sea Pac ("Teddy")	12,057	5,205			3,211	20,473
TOTAL	20,571	33,838	12,535		9,475	76,419

* Ceased Operations

TABLE OF CONTENTS

	<u>Page</u>
Introduction	1
District Summaries:	
Naknek-Kvichak District	4
Egegik District	7
Ugashik District	10
Nushagak District	12
Togiak District	15
Other Fisheries:	
Subsistence Fishery	17
Herring Fishery	18
Freshwater Fishery	18
Salmon Egg Processing	19

Tables

License Statistics, 1960-1967, Tables 1-2	20-21
Fishing Gear by District and Period, 1967, Table 3	22
Vessel Registration and Transfers, 1967, Table 4	23
Emergency Order Fishing Periods, 1967, Table 5	24
Catch and Escapement Summary, 1967, Table 6	25
Escapement Goals - Prediction, 1967, Table 7	26
Catch by Species and Period, 1967:	
Naknek-Kvichak, Table 8	27
Egegik, Table 9	28
Ugashik, Table 10	29
Nushagak, Table 11	30
Togiak, Table 12	31
Catch Summary, by District and Species, Table 13	32
Catch by Type of Gear, Table 14	33

	<u>Page</u>
Comparative Red Salmon Catches by District, 1951-1967, Table 15	34
" King " " " " " " " Table 16	35
" Chum " " " " " " " Table 17	36
" Pink " " " " " " " Table 18	37
" Coho " " " " " " " Table 19	38
" Total " " " " " " " Table 20	39
Comparative Escapements by District, 1951-1967, Table 21	40
Comparative Escapements by River System 1961-1967, Table 22	41
Catch and Escapement, Red Salmon, Naknek-Kvichak District by River System, 1955-1967, Table 23	42
Catch and Escapement, Red Salmon, Egegik and Ugashik Districts, 1951-1967, Table 24	43
Catch and Escapement, Red Salmon, Nushagak District by River System, 1951-1967, Table 25	44
Catch and Escapement, Red Salmon, Togiak District by River System, 1951-1967, Table 26	45
Total Inshore Runs, Red Salmon, by District, 1951-1967 Table 27	46
Comparative Inshore Runs, High Seas Catches and Total Bristol Bay Red Salmon Runs, 1955-1967, Table 28	47
Japanese High Seas Catches of Bristol Bay Red Salmon, 1952-1967, Table 29	48
Case Pack by Species, 1951-1967, Table 30	49
Fish per Case by Species, 1951-1967, Table 31	50
Frozen and Cured Fish Production, 1961-1967, Table 32	51
Fish Prices by Species, 1960-1967, Table 33	52
Average Weights, Red Salmon, 1963-1967, Table 34	53
Average Weights, Kings, Chums, Pinks and Cohos, Nushagak and Togiak Districts, 1964-1967, Table 35	54
Age Composition, 1967 Run, Table 36	55
Sex Composition, 1967 Run, Table 37	56
Smolt Data, Red Salmon:	
Kvichak River, 1955-1967, Table 38	57
Naknek River, 1955-1967, Table 39	58
Ugashik River, 1951-1967, Table 40	59
Wood River, 1951-1967, Table 41	60
Freshwater Commercial Catch Data, Tikchik and Naknek Lake Systems, 1967, Table 42	61
Herring Catch Data, Togiak District, 1967, Table 43	62
Bristol Bay Fishery Operators, 1967, Table 44	63-65

PREFACE

Data in the 1967 Annual Management Report supercedes previous reports. Errors in previous data have been corrected wherever found. Some data in each report are preliminary at the time of compilation and are corrected in the following year's report.

The authors would appreciate notification from readers on errors, suggestions for content material or format.

INTRODUCTION

The 1967 Bristol Bay run of red salmon proved to be only slightly below predicted values. A pre-season prediction placed the total run at 14,989,000 red salmon. A late-season revision reduced this to 13,749,000. This figure was then adjusted downward by 2,200,000, based on a probable catch of Bristol Bay mature red salmon by the Japanese high seas gill net fishery, to give an "inshore" run of 11,549,000 reds. The actual inshore run of 10,352,000 red salmon was therefore, well within the expected range, falling only 11% below the adjusted forecast. Final determination of the Japanese catch of mature and immature red salmon of Bristol Bay origin remains unresolved at this time, but tentative estimates indicate a catch of 1,000,000 matures and 600,000 immatures. The immatures would have contributed to the 1968 run.

Forecasts for individual river systems usually vary considerably more than the overall forecast for the Bay as a whole. System forecasts and actual runs were reasonably close in 1967 with two notable exceptions. The Nushagak and Ugashik district red salmon runs were only 50% as large as expected.

In anticipation of a run to the Igushik system below escapement requirements, the Board of Fish and Game adopted a staff proposal to close this section of the Nushagak district to commercial fishing during the red salmon season. The run exceeded expectations, and an excellent escapement of 282,000 reds was realized. This buildup will hopefully offset the poor escapement of 16,000 in 1962.

Escapement goals for 1967 were set at 8,200,000 based on a predicted run of 13,700,000 red salmon. The actual inshore run was only 75% of this total forecast, and escapements fell short by the same approximate percentage, 73% of pre-season goals. As could be expected, the greatest shortages occurred in those systems where runs fell appreciably below expectations. A feature of the 1967 run which influenced the catch-escapement ratio, was the unusually early timing of the run. The timing of runs to each of the five districts was five to six days earlier than normal, a factor which led to some speculation that the run would develop greater than anticipated strength. However, it

soon became apparent that this was not the case, and fishing time was sharply curtailed, resulting in only one-half to one-third normal fishing time for the season in most districts.

For the first time since 1962 there was a decrease in registered fishing gear. However, the reduction was so slight in terms of available harvest that Bristol Bay became a declared Disaster Area, and Federal and State funds were utilized to help offset the severe aftereffects upon the local economy. A similar situation occurred after the 1963 season, when the red salmon catch was 1,500,000 less than this year, and 181 less units of gear were registered. To emphasize the imbalance between available harvest and fishing effort, the 1967 red salmon catch was only 46% of the 1966 catch, yet the registered gear level in 1967 was nearly 90% of the 1966 registration.

Commercial fishing license revenues for Bristol Bay dropped to \$154,000 in 1967, down \$7,000 from the previous year. The reported wholesale value of the total salmon pack was \$16,133,000, one-half of the 1966 value. Estimated direct income to the State from case pack taxes and fishing license sales combined totalled approximately \$638,000.

There were 10 operating shore canneries processing salmon in 1967, three less than in 1966. Additionally, there were two canning ships, four freezer ships and six operators salting, hand-packing or marketing fresh salmon during the season. The reported value of frozen, salted and fresh salmon was \$367,000.

A new industry in 1967 was the processing of herring roe in the Togiak district. A small catch of 269,000 pounds of herring was taken to obtain the roe. No report on the value of the roe is available. It is anticipated that more effort will be directed toward this resource in the future.

Another new industry, started in 1966, is the processing of salmon eggs. Processing was conducted at three canneries in 1966, yielding 182,000 pounds of eggs valued at \$91,000. In 1967, eggs were processed at every operating cannery for a yield of 532,000 pounds valued at approximately \$819,000.

The lower value per pound for 1966 reflects price for the raw product only. The higher 1967 value reflects an estimated wholesale price for the processed product.

Overall, the 1967 salmon catch for all species ranked thirteenth over the past 17 years. Red salmon ranked fifteenth with 1963 and 1958 being the lowest. The king salmon catch was the second highest during the same period, and the chum salmon catch ranked sixth. The late-season coho catch is sporadic due to variations in effort, but the 1967 catch of 54,000 was the fourth highest in 17 years. By percent, the individual species contributed as follows to the total 1967 catch: 88% reds, 10% chums, and 2% kings.

Under funds available through a new Federal aid program to states with commercial fisheries, an offshore test fishing project was initiated this year in Bristol Bay. A 78 foot vessel under State charter fished a series of stations with standard 5-3/8 inch gill net on a straight line offshore from Port Moller towards Cape Newenham.

The basic objective of this test fishing is to correlate catches with the actual inshore run to verify or adjust the red salmon run prediction approximately one week before reaching the fishing districts. Age composition data is collected from samples to further compare the actual run with the predicted run age composition. Run timing and entry pattern will also be observed. Weather and mechanical difficulties hindered the 1967 effort, but prospects for future success are encouraging for development of another technique for more exact and efficient management. In 1968, the addition of electronic fish finding equipment is planned to upgrade the project.

Final field testing of the Bendix Corporation production model automatic electronic fish counter was carried out, and working models will be in permanent operation in at least one river system in Bristol Bay during 1968.

Several staff changes occurred during 1967. A new position was authorized this fiscal year and has been filled by Glen Van Valin. Glen is the resident biologist at the King Salmon field office. Angus Robertson, formerly Assistant Area Biologist at King Salmon, transferred to the Sport Fish Division. His position was filled by Don Siedelman, formerly stationed at the Dillingham field office. Joan Addington, secretary at King Salmon moved to Southeastern Alaska at the end of the season and left State employment. Ken Middleton, Area Biologist transferred to Anchorage in the fall, where the Area office is now located. Don Siedelman also transferred to Anchorage in his new capacity. His vacancy in Dillingham was filled by Darwin Biwer in mid-winter. Cheryl Harms became the Area office secretary in September.

DISTRICT SUMMARIES

NAKNEK-KVICHAK DISTRICT

The Naknek-Kvichak district fishing boundaries remained unchanged from 1966. There were no boundary changes made during the fishing season. Separate closures were not employed in either the Kvichak or the Naknek sections, the district was managed as one unit throughout the season.

Pre-season fishing gear registration was 976 units of drift and set gill net combined, down 196 units from the 1966 level. The drift gill net gear registration dropped 20%, and set gill nets by 8%. However, the highest effort recorded for both types of gear, based on fish ticket deliveries indicated 735 units at the peak of the season (Table 3).

The total district forecast of 7,367,000 red salmon had a 3,993,000 run to the Kvichak River, 2,564,000 to the Naknek and 810,000 to the Branch River. Total runs by river system were: 5,017,000 to the Kvichak, 1,225,000 to the Naknek and 269,000 to the Branch River. The actual run of 6,512,000 to the Naknek-Kvichak district was 88% of the total forecasted. If the "adjusted" forecast, allowing for an average high seas catch is used, the actual inshore run was 325,000 higher than expected.

The Emergency Order field regulation period started at midnight, June 20 in 1967. The first period was an extension of 33 hours to the 39 hours of regular fishing time since June 19, totaling 72 hours of continuous fishing time for the week. The catch of 227,000 red salmon, 10% of the season total, was high for this early in the season, but not of such magnitude to cause particular concern or optimism.

The next fishing period, 49 hours later, was only 12 hours long and a catch of 384,000 was realized. This catch combined with the previous period placed the cumulative total within 25% of the anticipated allowable season catch. On the average, only 6% of the season catch is realized by this date.

After a closure of 63 hours another 12 hour fishing period commenced on June 28. By this time 82,000 fish had been counted past the Naknek River tower and 172,000 past the Kvichak tower, representing 10% and 5% of the total escapements respectively. This is slightly above normal for the Kvichak by June 27 and twice the average percent for the Naknek River by the same date. Test fishing at the mouth of the Kvichak River indicated an escapement into the river of 201,000. The catch for the June 28-29 period started off with strong showings throughout

the Naknek section and set nets were heavy with catches early in the period, particularly from Peterson Point to the mouth of the Kvichak River. The resultant catch of 672,000 marked the peak catch period of the season (Table 8).

A closed period of 98 hours followed the heavy catch on June 28-29. During this time the Naknek counted escapement reached 427,000 and the Kvichak towers had counted 1,235,000. A daily escapement count of 121,000 was made on June 29 on the Naknek, the season's highest count, and daily counts were in the 30-40,000 per day range by July 2. The peak count at the Kvichak River towers was on July 1 at 349,000. On June 30 an estimated 500,000 reds were counted in the Kvichak River in clear water below the towers.

Though 50% of the expected catch had already been taken before July 1, the early escapement figures plus a four day closure, prompted another 12 hour fishing period on July 3. The 504,000 catch was a decline from the previous period, but surprisingly high in view of test fishing sampling in the district just before the period which indicated a general lack of fish. By this time the aerial observations of the Kvichak River also were low and did not indicate any large numbers of fish moving through the district.

Examination of all the data available indicates there was a general slackening in the run just before the July 3 period, and the fishery opened on the forerunners of another surge in the run. From July 4 to the next period 112 hours later on July 8, the daily tower counts on the Kvichak stayed very near 200,000 reds per day to run the cumulative escapement to 2,191,000 through July 7. The cumulative escapement past the Naknek towers through July 7 totalled 637,000 with counts still around 30,000 per day. The average cumulative percent escapement for the Naknek by this date is 39%.

On July 8, nearly five days since the last fishing period, a 12 hour period was allowed. The catch dropped significantly to 219,000, less than one-half the previous period catch. All indications, test fishing, aerial observations and daily tower counts, pointed to a definite slowdown in the red salmon run.

After keeping the fishery closed for another four days, a 19 hour period commenced on July 12, the last week of field regulation fishing. The 182,000 catch was 18% below the previous period, and definitely marked the decline of the red salmon run for 1968 in the Naknek-Kvichak district.

Age composition analysis of the inshore runs to the three river systems of the Naknek-Kvichak district determined that 87% of the Kvichak River reds were from the 1962 brood year, 12% from 1961 and 1% from 1963. The Branch River, tributary to the Kvichak, run differed somewhat with 67% 4-year fish from 1963, 31% from the 1962 brood year and 2% 3-year fish

from the 1964 brood year. The Naknek River run was composed of 47% 6-year fish from 1961, 43% from 1962 and the remaining 10% were 4-year fish from 1963.

CATCH

The Naknek-Kvichak district catch for all species of salmon was 2,391,000, representing 48% of the total Bristol Bay catch for 1967. This catch was 54% below the 17 year average for the district (Table 20).

The 2,337,000 red salmon catch represented 50% of the Bristol Bay total red catch, and was 53% below the average catch since 1951 (Table 15). Age composition of the district catch was 75% 5-year fish, 22% 6-year fish and 3% 4-year fish. The average weight for reds based on random sampling was 5.9 pounds.

King salmon are a minor species in this district and the 1967 catch of 3,705 is the lowest catch recorded over the past 17 years. This is largely attributed to limited effort rather than being a true reflection of abundance.

Chum salmon were also far below average, and this does reflect actual scarcity since the chums run concurrently with the red salmon. The 49,606 catch was 59% below average, and is the third consecutive year of low catches since 1965 (Table 17).

Coho catches are insignificant in this district. The lateness of the run also limits the fishing effort since all major canneries are normally closed by early August. The 1967 catch of 1,175 is about average, but well below catches of the last few years (Table 19).

ESCAPEMENT

Counting towers are operated on the Kvichak, Branch and Naknek rivers to enumerate escapements to these three systems that drain into the Naknek-Kvichak district.

In addition to the daily tower counts, a test fishing vessel is operated at the mouth of the Kvichak River to obtain daily estimates of escapement as the fish pass from the fishing district into the river proper. This gives an indication of the escapement level from two to four days in advance of the tower counts, a crucial factor on the important Kvichak River run. Also, daily aerial observations are made during the height of the season to further verify the escapement in the river below the counting towers. This combination greatly facilitates more exact management control of the fishery.

The Kvichak River escapement goal for 1967 of 3,500,000 was very nearly achieved with a final escapement of 3,216,000, representing 77% of the district total. This was an increase of 636,000 fish over the primary brood year of 1962. The escapement age composition was 88% 5-year fish, 11% 6-year fish and 1% 4-year fish. The sex ratio was 53% males and 47% females. A good correlation existed between test fishing catches and actual escapement. The test fishing indices indicated a total escapement of 3,887,000. Consequently, the daily estimated values were within reasonable limits for management purposes.

Branch River empties into the Kvichak above the commercial fishing district, and cannot be managed as a separate entity. Therefore, this system's escapement is coincidental with the management of the Kvichak River escapement. The escapement of 202,000 is about average and better than the previous two years (Table 23). The Branch River system contributed 5% to the total district escapement.

The Naknek River system is considerably shorter than either the Kvichak or Branch rivers. Consequently, escapement is counted past the towers much earlier after the fish pass through the fishing district, and the fishery can usually be regulated on the basis of daily tower counts. Another element that provides some measure of separate management control over the Kvichak-Branch River and Naknek River runs is the separation of the Naknek-Kvichak district into two sections. Separate closures or openings of these sections as conditions indicate, have aided considerably in obtaining proper escapements to the two separate river systems, as well as realizing better utilization of the harvestable surplus. Due to the balance between the two runs, and with the district forecast, the district was managed as one unit throughout the 1967 season.

The final Naknek River escapement of 755,000 red salmon fell short of the 1,000,000 goal, but was within the desired range. This was still 156,000 below the 13 year average (Table 23). Age composition of the escapement was 43% 6-year fish, 43% 5-year fish and 14% 4-year fish. The sex ratio was 52% males and 48% females.

EGEGIK DISTRICT

Egegik district fishing boundaries were the same as in 1966, and no changes were made during the season.

The 512 registered drift and set gill nets was an increase of 11 units over 1966. The highest actual number of units reported fishing was 447 during a 24 hour period on June 28-29 (Table 3).

The late-season forecast of 13.749 million red salmon to Bristol Bay assigned a run of 2.381 million to the Egegik district. The actual run totalled 1.707 million, 28% below the forecast, and 17% below the

17 year average (Table 27). However, the run was only 15% short of the late-season forecast less an allowance for the high seas catch.

Emergency field regulation fishing began at midnight, June 20 with a 33 hour extension after 39 hours of regular time that began at 9:00 a.m. on June 19. The catch for this total 72 hours was 212,000. A catch of 10,974 reds made during the entire previous 5-day fishing week brought the cumulative catch to 223,000 at the end of the first Emergency Order period on June 22 (Table 9). This represented 20% of the eventual total catch, an exceptionally high figure for this early date. The average catch by June 22 is only 5% for this district.

Fishing was closed for 49 hours before another opening, a 24 hour fishing period, was allowed on June 24. The resultant catch of 173,000 was reasonably good, particularly for this early in the season. This brought the season catch to 396,000, or 37% of the final catch. This compares to an average catch of 9% by June 25.

A closure of 76 hours was imposed to allow the escapement to build-up after the fast start on the catch. Though the indicated escapement by test net catches through June 27 was only 107,000, there wasn't any great concern at this point since the normal peak of the run was still a week away, and the bulk of the escapements are obtained during the peak of the run.

Another fishing period of 24 hours commenced on June 28. The very high catch of 506,000 nearly 50% of the total season's catch and higher than any period during the record 1965 season, marked the peak of the Egegik run. Had it been realized that the peak of the run was setting in a full week ahead of normal timing, a shorter fishing period of 12 hours would have been more appropriate, and a better balance between catch and escapement probably would have been possible.

Once the surprisingly high catch had been tallied, the fishery was kept closed for nearly five days to further build the escapement. On July 2, an aerial observation of the clear-water lagoon just below the counting towers yielded a count of over 200,000 reds. The tower counts totalled 146,000 through July 2. By July 3, the estimated total escapement from test fishing in the river just above the fishery, indicated a total escapement in excess of 300,000 fish corresponding closely with aerial visual counts below the towers plus those already counted past the towers. These indications plus strong catches of new fish along the outer edges of the district by outside test boats during the closure led to some hope the run was coming up to expectations.

A 12 hour fishing period on July 4 to test the run strength throughout the district clearly demonstrated that the run was essentially over with a catch of 116,000 reds.

Following this definite drop in available fish, the district was kept closed for eight days in an effort to salvage whatever was left of the run for escapement. The final escapement of 636,000 red salmon was 23% below the 17 year average escapement, and clearly points out the danger of 24 hour fishing periods with the current levels and efficiency of fishing gear in the short-season commercial fishery in Bristol Bay.

The 1967 red salmon run to the Egegik district consisted of 54% from the 1962 brood year, 43% from 1961, 2% from 1960, and 1% were 4-year fish from 1963.

CATCH

The Egegik district catch for all species of salmon was 1,085,310, 22% of the total Bristol Bay catch in 1967. This represents a 15% decrease from the 17 year average (Table 20).

Red salmon dominate in this district and accounted for 99% of the salmon catch this year. The district catch of 1,070,000 was 25% of the total Bay red catch and 13% below the 17 year district average.

The age composition of the red salmon catch consisted of 54% 5-year fish, 43% 6-year fish, 2% 7-year fish and 1% 4-year fish. The average weight for reds was 6.2 pounds.

The king salmon catch of 2,285 was about average for this district and only represented .2% of the total district catch.

The chum salmon catch of 11,000 was only one-third of the 1966 catch, but nearly identical to the 1965 catch. The 17 year average catch is 26,000 (Table 17). Chums accounted for 1% of the district catch in 1967.

Coho catches are characteristically small in Egegik. The smaller catches in recent years probably reflects less effort since most of the catch is hard-salted by two or three individuals (Table 19).

ESCAPEMENT

Normally, the Egegik district is not as difficult to manage for escapement as some other districts. Although the river itself is muddy and fish cannot be visually observed until they enter the large, clear-water lagoon just below the counting towers, fish move rapidly through the river and often can be observed within one or two days after leaving the fishing area. Additionally, a test fishing vessel is operated in the river just above the commercial fishing area, and provides valuable daily estimates of escapement in advance of visual observations of the lagoon. This is particularly helpful when weather conditions hamper the aerial estimates.

The Egegik system escapements have been maintained at a high and sustained level since 1960. Including the 1967 escapement of 636,000, the average escapement over the past eight years is 1,032,000, nearly twice the average for the eight years before 1960. During these same periods, the total runs since 1960 have risen to 2.6 million from 1.5 million for the eight previous years. Of course, this comparison must also take into account that the age groups overlap. In other words, the run for a particular year is composed of fish that spawned five and six years earlier. However, the general observation is that the system can produce higher sustained yields than it has in the past and that this is directly related to higher sustained levels of escapement. Statistical analyses indicate that maximum yield can be achieved with escapements in the range of 1,000,000 spawners.

Age composition of the 1967 escapement was 54% 5-year fish, 43% 6-year fish (both identical with the catch), 3% 7-year fish and a small fraction of 4-year old fish.

UGASHIK DISTRICT

The Ugashik district was enlarged slightly for 1967 by Board of Fish and Game regulation. The north end of the outer boundary was moved approximately seven miles up the coast from Smokey Point to Cape Greig. This relocation has the advantage of a prominent, natural boundary demarcation.

Gear registration totalled 169 units for both drift and set gill nets, down 67 units or 28% from 1966. This undoubtedly resulted from the poor outlook forecast for the Ugashik district in 1967.

The total red salmon run forecast for this system was 933,000. The actual run of 407,000 was the lowest in 12 years and only 52% of the pre-season forecast. The run adjusted for a probable high seas catch lowered the inshore run prediction to 784,000, a figure still 48% higher than the actual inshore run.

At the close of the first Emergency Order fishing period on June 22 a catch of 22,000 had been made. Though a small catch in itself, this represented 13% of the season's red salmon catch, an uncommonly high percentage by this date.

After a 49 hour closure, a 24 hour fishing period was allowed on June 24, producing a catch of 28,000. Another comparatively small catch, but then the run was not expected to be large, and this date is very early for this traditionally latest red salmon run. However, the cumulative catch by June 25 was 31% of the season's total, an unheard of figure for this district by this date.

Fishing was closed for 77 hours until June 28 when a 12 hour opening was permitted. The 32,000 catch was still low, but marked the peak catch for the district in 1967, and raised the cumulative total to 50% of the season's catch. The average cumulative catch by this date is 10%.

Test fishing estimates of daily escapement rose significantly on June 30 and by July 2 indicated an escapement of 227,000 to date. After a closure of four days, 14 hours of fishing began on July 3, resulting in a still lower catch of 20,000 reds.

However, test fishing catches in the river also began to drop sharply after the encouraging indication on June 30, July 1 and July 2. Consequently, although only 104,000 red salmon had been caught and the indicated escapement was only 238,000 through July 3, the entire Bristol Bay run was obviously well in advance of the normal timing by this date. Although the estimated run was only one-half the predicted Ugashik run by this time, the fishery was kept closed an additional $4\frac{1}{2}$ days to gain on the escapement.

By July 7 the estimated escapement indicated 300,000 and a last fishing period during the Emergency Order period was opened on July 8. The 14 hour opening produced the second highest catch of the season, and was somewhat surprising in view of the obvious low level of the run by this time. For added protection, the district was kept closed for the remaining $8\frac{1}{2}$ days of the field regulation period. The next week of July 17-22 reverted to the standard five days of fishing during which an additional catch of 26,000 was recorded.

The 1967 Ugashik run was dominated by 5-year fish from the 1962 brood year, accounting for 70% of the run. The 1961 brood year contributed 27% and the remaining 3% were 4-year fish from 1963.

CATCH

The total salmon catch of 181,000 for the Ugashik district is the lowest recorded in the last 17 years (Table 20), and represented only 4% of the total Bristol Bay catch.

The red salmon catch, representing 90% of the district total was also the lowest recorded in 17 years, 75% below average (Table 15). Age composition of the catch consisted of 67% 5-year fish, 31% 6-year fish, $1\frac{1}{2}\%$ 4-year fish and a fraction of 7-year fish.

Other species are minor by comparison to reds in this district as in all the districts in the eastern half of the Bay. All other species catches were down except for the coho catch which was 72% above 1966.

ESCAPEMENT

Managing the escapement to the Ugashik system presents a much different problem than in adjacent systems. Though the Ugashik River is very similar to the Egegik, short and muddy up to a shallow, clear lagoon, the fish behavior is much different. Their migration is very slow by comparison, taking several days to reach the lagoon and pass by the counting towers immediately above the lagoon. Additionally, the Ugashik River lagoon is small, has a dark-colored bottom and aerial estimates are difficult except under ideal conditions.

Test fishing in the Ugashik River just above the commercial fishery is particularly helpful under these circumstances. The daily test fishing data in 1967 slightly over-predicted since a total escapement of over 300,000 was indicated. The actual final escapement was 244,000 red salmon, but this variation is still well within practical limits for management purposes.

The 1967 escapement of 244,000 is the lowest since State management began in 1960 as was the total run. This run corresponds to the low 1962 escapement of 274,000 from which it was largely derived.

The age composition of the 1967 escapement was composed of 72% 5-year fish, 24% 6-year fish and 4% 4-year fish.

NUSHAGAK DISTRICT

The Nushagak district fishing boundaries in 1967 remained similar to those of 1966 with the exception of the Igushik section. The Igushik fishing area was both enlarged and closed to commercial fishing in 1967. It remained closed throughout most of the red salmon season and was opened to fishing on July 8 after escapement goals in that system were assured.

The Snake River section remained closed to fishing throughout the red salmon season.

Licensed fishing gear for the district totalled 772 gill nets, including both drift and set net gear, 47 less than in 1966. Many drift fishermen licensed both drift and set net gear and subsequently did not use their set net gear while many set net fishermen simply did not fish because of the poor run. Of the 230 set nets registered for fishing in 1967, only about 130 actually participated in the fishery.

The district prediction of 2,888,000 red salmon had 2,484,000 assigned to Wood River; 153,000 to Igushik River; 128,000 to Nuyakuk River; 123,000 to Snake River and the Nushagak-Mulchatna system combined. The total runs by river system were: Wood - 1,046,000, Igushik - 300,000

Nuyakuk - 53,000 and Snake-Nushagak-Mulchatna - 134,000; for a total run of 1,533,000 or 53% of the predicted run for the district. The total run of king salmon was estimated to be from 150,000 to 180,000, while the chum salmon run was estimated at 390,000 to 410,000.

During the first week of field regulation 72 hours of fishing produced a catch of 31,000 red salmon. This catch was about average for this period and when the 24-hour period, beginning on June 24, produced a catch of 84,000 red salmon, hopes were high for a good run.

After a closure of four days, a 12 hour fishing period was allowed on June 29 to test for the presence of fish in the district. Heavy catches totalling 421,000 salmon were made in both Ship and Middle channels by the drift fleet and along Ekuk beach where the two channels merge. Catches were extremely poor north of Ekuk and it was evident that the run had just begun to move into the district.

Subsequent test fishing efforts immediately after the fishing period on June 29 indicated no large volume of fish were building up in the district. The Wood River escapement began to build up rapidly on July 2 and July 3 and the test boat made good catches on July 3. Consequently, a 12-hour fishing period was announced for July 4. When it became evident that the catches were very poor and that rough weather was further limiting the effectiveness of the fishing fleet, the period was extended for an additional 12 hours to test for the presence of incoming fish. The total period catch was 90,000 red salmon, with an additional 46,000 chum salmon being taken.

It became apparent shortly after July 5 that the peak of the Nushagak district red salmon run was already past and that the run was about six days earlier than normal. Test boat catches continued to be poor, and the Wood River escapement counts, after totalling 148,000 on July 4, also began to drop off. With the exception of the Igushik section, which was opened to continuous fishing on July 8, the remainder of the district was closed until July 12 to protect the remainder of the red salmon run.

By July 12 it was evident that the red salmon run was over and that large numbers of chum salmon were present in the fishery. Continuous fishing from July 12 through July 16, resulted in a catch of 218,000 fish, most of which were chum salmon.

In general, the weather was favorable to fishing efforts in the Nushagak district in 1967. Although the amount of fishing gear fluctuated with each fishing period, reliable estimates of fishing effort present were 550 boats and 130 set nets. The set net fishery took a much smaller portion of the catch than in previous years. This was due to the very short, intense run and the mobility of the drift fleet.

Overall age composition of the catch and escapement combined was 49% 4-year fish from the 1963 brood year and 48% 5-year fish from the 1962 brood year, with the balance made up mainly of 6-year fish from the 1961 escapement.

CATCH

The total catch of all species for the Nushagak district in 1967 was 1,124,000 salmon which represents 23% of the total Bristol Bay harvest. The 17 year average for the district is 1,618,000 (Table 20).

The red salmon catch of 653,000 contributed 59% of the total district harvest and was 30% lower than the 17 year average (Table 15). Age composition analysis of the red catch showed that 43% were 4-year fish, 54% were 5-year fish, with the balance made up primarily of 6-year fish. Average weight of red salmon in the catch was 5.6 pounds.

The Nushagak district king salmon catch of 96,000 was the second highest catch in the last 17 years and was 37% higher than the average catch for this period (Table 16). For the second consecutive year the harvest of early-run king salmon was affected by price negotiations between fishermen and processors. However, unlike 1966, the price dispute did not appreciably lower the early season catch, as two fresh/frozen processing ships were present in the district as well as one shore plant which shipped fresh fish to Anchorage. Age composition of the king salmon catch was 24% 4-year fish, 29% 5-year fish and 41% 6-year fish. Average weight was 21.0 pounds.

Chum salmon began entering the fishery in good numbers on June 24 and by the end of the season the catch totalled 338,000 chums (Table 17). This catch was the largest since 1964 and was 37% higher than the average catch for the past 17 years. Analysis of scales showed that over 89% of the chums were 4-year fish, while the average weight was 6.6 pounds.

The coho salmon catch of 32,000 was the largest since 1958 and represents a 16% increase over the past 17 year average (Table 19). The increased catch was due primarily to increased effort on this late-run species. Sampling of the commercial catch showed that the cohos averaged 7.0 pounds and 99% were 4-year fish.

ESCAPEMENT

Counting towers are maintained on the Wood, Igushik, Nuyakuk, and Nushagak Rivers for the purpose of enumerating red salmon escapement into these systems. Aerial surveys are employed to determine escapements into areas without towers.

Red salmon escapement goals were achieved only in the Igushik and Nushagak-Mulchatna River systems. The Wood, Snake, and Nuyakuk River systems' runs all fell far below the predicted forecast. Total escapement to the district was 875,000 or 57% of the total red salmon run, and was the smallest escapement since 1961 (Table 21). Wood and Nuyakuk Rivers received escapements of 516,000 and 20,000 red salmon respectively, 59% and 2% of the district total. The Igushik River escapement of 282,000 was the largest since 1961 and made up 32% of the district total. The remainder of the Nushagak escapement (47,000) spawned in the Snake and Nushagak-Mulchatna River systems. Analysis of scales showed that the major age classes of the red salmon escapement to the different rivers were: Wood - 59% 4-year fish and 39% 5-year fish; Igushik - 51% 4-year fish and 47% 5-year fish; and Nuyakuk - 17% 4-year fish and 82% 5-year fish.

King salmon counted past the Nushagak River tower totalled only 5,000. This was a minimal estimate and was not indicative of the large number of kings that escaped the fishery in 1967. Subsequent aerial surveys and analysis of commercial and subsistence catches indicated an escapement of 50,000 to 80,000 king salmon.

After analysis of partial tower counts on the Nushagak River, aerial surveys, and commercial and subsistence catches, the escapement of chum salmon to the Nushagak district was estimated to be from 50,000 to 70,000.

No escapement enumeration was conducted on the limited pink and coho salmon runs.

TOGIK DISTRICT

The fishing area in Togiak district remained similar to that of 1966 and no boundary changes were employed during the 1967 season. Of seven sections open to fishing in 1967 only three were fished all season: Togiak, Osviak and Kulukak, with the Togiak River section accounting for over 71% of the commercial catch.

Licensed fishing gear for the district totalled 100 gill nets, including both drift and set net gear, two less than in 1966. The fishing fleet, which are almost all double-end sailboat conversions and skiffs, concentrated their fishing efforts in the Togiak River and Kulukak sections. Five set nets and several drift skiffs fishing in the Osviak section for the second year.

The district forecast called for a run of 180,000 red salmon. The actual inshore run totalled 192,000 and was the second year in a row that the predicted forecast had been within 7% of the return. The total run of king salmon was estimated to be from 19,000 to 21,000, while the chum and coho salmon runs were estimated at 216,000 and 28,000 respectively.

The Togiak River, Ungalikthluk, Nunavarchak, and Kulukak sections were reduced to 4 day per week fishing by regulation in 1967. Osviak and Matogak sections remained 5 day per week fisheries and the Cape Pierce sub-section a 7 day per week fishery.

Though a reduced fishing week was in force it was necessary to further restrict fishing in the 4 day per week sections for a total of six more days during the season to assure escapement goals. It was theorized, and later confirmed by scale pattern analysis, that Togiak River-bound red salmon were being caught on the outer limits of the Kulukak, Nunavarchak and Ungalikthluk sections. The problem was so serious that the Department will recommend for next season, a boundary change for the Kulukak section and elimination of both Nunavarchak and Ungalikthluk sections as fishing areas.

The season progressed as expected, although like the other districts in Bristol Bay, the red salmon run was approximately five to six days early.

Overall age composition of the catch and escapement combined was 25% 4-year fish from the 1963 brood year, 63% 5-year fish from 1962 and 12% 6-year fish from 1961.

CATCH

Total district catch of all salmon species for the Togiak district in 1967 was 197,000 which represents 4% of the total Bristol Bay harvest. The 14 year average for the district is 224,000 (Table 20). Togiak River section accounted for 141,000 fish while Osviak and Kulukak sections contributed 21,000 and 35,000 fish respectively.

The 1967 red salmon catch of 101,000 was 19% below the 14 year average (Table 15). Red salmon accounted for 51% of the total district catch in 1967. Age composition of the red salmon catch showed that 67% were 5-year fish, while 16% and 17% respectively were 4 and 6-year fish. Average weight of red salmon in the catch was 7.1 pounds.

The harvest of 13,000 king salmon was the largest in the 14 year history of the fishery. Age composition of the catch was composed of 6% 4-year fish, 10% 5-year fish, 74% 6-year fish and 10% 7-year fish.

Chum salmon are taken concurrently with the red salmon fishery in the Togiak district. With the poor red salmon forecast, fishing time was restricted to 4 days per week in the Togiak and Kulukak section. Further restrictions on fishing time were necessary to attain red salmon escapement goals and as a result the chum salmon catch was the lowest since 1959. Total chum salmon catch was 63,000, with the majority being taken in the Togiak River sections. Over 71% of the chums were 4-year fish and sampling indicated the average weight was 7.0 pounds.

Late season catches of coho salmon totalled 18,000 and was the largest in the history of the fishery. The majority of the cohos were flown to Anchorage where they were frozen and sold.

ESCAPEMENT

Togiak River red salmon are enumerated from a counting tower at Togiak Lake, while aerial surveys are employed to estimate salmon escapements in the remainder of the Togiak district spawning areas.

The red salmon escapement was on the lower end of the desired escapement range in 1967. Total escapement to the district was 91,000 or 47% of the total red salmon run. Togiak Lake (Togiak River) accounted for 76% of the total district escapement. Age composition of the red escapement was 35% 4-year fish, 58% 5-year fish and 7% 6-year fish.

Aerial surveys were flown on all important king and chum salmon producing systems in 1967.

King salmon escapement was estimated to be approximately 6,000 to 8,000 with the majority of the fish spawning in the main Togiak River.

Chum salmon surveys of Slug, Osviak and Matogiak Rivers in the western portion of the district produced estimates of 14,000, 15,000, and 6,000 in these three areas respectively. Both spawning creeks on Hagemaster Island were surveyed and estimate of the chum salmon spawning population was 6,000. The Quigmy River chum population was estimated at 4,000, while several smaller streams had combined spawning escapements of 2,000 chum salmon. Total observed chum salmon escapement west of the Togiak River was 47,000. Togiak River, the single most important chum salmon producer, had an escapement of 65,000. East of the Togiak River, important chum streams had the following spawning populations: Ungalikthluk - 5,000; Kukayachagak - 15,000; Right Hand Point Creek - 2,000; Kulukak River - 18,000 and several smaller streams had 1,000 spawning chum salmon. Total observed chum salmon spawning escapement east of the Togiak River was 41,000. Total estimated chum salmon escapement for the entire district was 153,000.

Late season aerial surveys produced an escapement estimate of 10,000 coho salmon for the Togiak River system.

OTHER FISHERIES

Subsistence Fishery

For the fifth consecutive year subsistence catches in the Nushagak district were recorded. The total subsistence catch in 1967 was 58,000

which consisted of 4,000 king salmon, 35,000 reds, 14,000 chums, 4,000 cohos and 1,000 pink salmon. Although subsistence requirements are still significant in the district, the advent of gasoline snow travelers and better diet variety, has reduced the catch substantially over previous years.

Subsistence data for the Naknek and Kvichak River systems since 1963 has been compiled in a special report to be published soon. A system of permits has been utilized on the Naknek River during these years. In the Kvichak River-Iliamna Lake system physical counts of subsistence catches were conducted in six villages in 1963, 1966 and 1967. Estimates based on averages were used for 1964 and 1965.

Averages for the Naknek River by species for the 5-year period are: kings - 741; reds - 5,295; chums - 177; cohos - 740 and pinks - 1,076. The 1967 estimated subsistence catch was: kings - 699; reds - 6,239, chums - 100; cohos - 784 and pinks - 274 for a total utilization of 8,096 salmon.

Average subsistence utilization in the Kvichak River-Iliamna Lake system for the period 1963-1967 was 56,242 red salmon. Virtually the entire salmon subsistence catch is composed of red salmon. The 1967 utilization was estimated at 60,350.

Herring Fishery

A small experimental herring-roe fishery was developed in 1967 in the Togiak district. The short-duration fishery began on May 14 and terminated on May 27 when herring catches began to dwindle. Nineteen Togiak fishermen delivered 269,000 pounds of herring, an average of 1,400 pounds per fisherman. Estimated recovery of roe based on total weight was 10 to 14%. The processed roe was very well received on the market and it appears that additional processors will engage in the fishery next season.

Freshwater Fishery

Freshwater commercial fishing was carried out in two watersheds of Bristol Bay on a limited scale in 1967. Market, transportation and availability of fish continued to be the major problems limiting this fishery in Bristol Bay.

The Tikchik Lake commercial freshwater fishery was initiated in March and terminated in April due to extremely poor catches. A total of four fishermen caught over 2,000 pounds of fish, with humpback whitefish and lake trout again predominating in the catch (Table 42).

That portion of the Naknek Lake system outside of the Katmai National Monument was fished commercially from May through November by one fisherman. Total catch of all species was 4,000 pounds, with whitefish and lake trout predominating in the catch. Fishing terminated in the Naknek system when freeze-up occurred.

Miscellaneous

A rapidly growing enterprise in the Bristol Bay commercial fishery is the processing of salmon eggs. Started in 1966 on a small scale when only 182,000 pounds of eggs were processed, the operation expanded into a major enterprise in 1967 with 532,000 pounds of salmon eggs being processed.

The salmon egg processing business is conducted by Japanese firms who export the product to Japan for human consumption. The firms place Japanese technicians in the various canneries to supervise the processing and local labor is hired to carry out the physical work.

Estimates of the value of processed eggs are somewhat ambiguous due to the method of reporting. Nearly all of the production reports were made by the domestic cannery where the processing occurred. Therefore, reported values represent the raw product rather than the processed product, as is the case with values of canned salmon. However, one standard can be applied to relate the comparative value of this additional utilization. Since the processed value in the United States was not available when this report was compiled, the wholesale price in Japan for salted salmon eggs as of September, 1967, was applied as one measure of value. By species these values were: chums, \$1.63/lb.; reds and pinks, \$1.50/lb.; kings, \$1.44/lb.

Unfortunately, very little of the 1967 production was reported by species, but by using two major processors as a basis, total production by species can be closely approximated and estimated values by species derived.

	<u>Reds</u>	<u>Kings</u>	<u>Chums</u>	<u>Cohos</u>	<u>Totals</u>
Pounds	143,128	122,377	236,774	29,797	532,076
Value	\$214,692	\$176,222	\$385,941	\$42,907*	\$819,762

*Price of kings used for coho since price was not available.

Table 1. License Statistics, Bristol Bay
1960 - 1967

	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>
COMMERCIAL FISHING LICENSES								
Resident	1,422	2,112	1,993	2,258	2,494	2,124	2,763	1,862
Non-resident	745	1,506	933	1,344	1,231	1,674	1,501	1,560
TOTAL	2,167	3,618	2,926	3,602	3,725	3,798	4,264	3,422
VESSEL LICENSES								
<u>Fishing Vessels</u>								
Resident	804	1,058	1,031	1,209	1,161	1,181	1,227	1,184
Non-resident	350	665	386	581	605	722	902	776
TOTAL	1,154	1,723	1,417	1,790	1,766	1,903	2,129	1,960
<u>Scows</u>								
Resident	22	14	30	33	15	1/	10	8
Non-resident	28	46	19	32	35	-	24	53
TOTAL	50	60	49	65	50	-	34	61
GEAR LICENSES								
<u>Resident</u>								
150 F. Drift net	561	674	715	766	815	800	875	836
100 F. Drift net	89	106	76	148	132	116	144	129
50 F. Set net	345	496	619	773	793	868	826	686
TOTAL	995	1,276	1,410	1,687	1,740	1,784	1,845	1,651
<u>Non-resident</u>								
150 F. Drift net	342	600	383	509	639	626	762	678
100 F. Drift net	22	38	17	36	50	51	84	56
50 F. Set net	0	10	20	116	137	125	139	144
TOTAL	364	648	420	661	826	802	985	878
TOTAL GEAR	1,359	1,924	1,830	2,348	2,566	2,586	2,830	2,529
TOTAL LICENSES SOLD ^{2/}	4,730	7,325	6,222	7,805	8,107	8,587	9,257	7,972
TOTAL LICENSES REVENUES COLLECTED	\$72,075	--	\$87,725	\$92,250	\$113,359	\$131,895	\$161,145	\$153,820

1/ Scows included with vessel licenses.

2/ Information on total license sales indicates only those licenses sold in Bristol Bay.

Table 2. Gear Registration by District, 1967 ^{1/}

Fishing District	150 F. Drift	100 F. Drift	50 F. Set	Total
	<u>1967</u>	<u>1967</u>	<u>1967</u>	<u>1967</u>
<u>NAKNEK-KVICHAK</u>				
Resident	234	41	269	544
Non-resident	<u>400</u>	<u>5</u>	<u>27</u>	<u>432</u>
TOTAL	634	46	296	976
<u>EGEGIK</u>				
Resident	106	9	165	280
Non-resident	<u>152</u>	<u>16</u>	<u>64</u>	<u>232</u>
TOTAL	258	25	229	512
<u>UGASHIK</u>				
Resident	44	14	53	111
Non-resident	<u>34</u>	<u>6</u>	<u>18</u>	<u>58</u>
TOTAL	78	20	71	169
<u>NUSHAGAK</u>				
Resident	357	65	195	617
Non-resident	<u>91</u>	<u>29</u>	<u>35</u>	<u>155</u>
TOTAL	448	94	230	772
<u>TOGIAK</u>				
Resident	95	0	4	99
Non-resident	<u>1</u>	<u>0</u>	<u>0</u>	<u>1</u>
TOTAL	96	0	4	100
<u>BRISTOL BAY</u>				
Resident	836	129	686	1,651
Non-resident	<u>678</u>	<u>56</u>	<u>144</u>	<u>878</u>
TOTAL	1,514	185	830	2,529

^{1/} Based upon gear license count - registration at start of season - does not incorporate district transfers.

Table 3. Fishing Gear by District
and Fishing Period, 1967 1/

Naknek-Kvichak District				Egegik District			
Period	Number			Period	Number		
	Drift Net	Set Net	Total		Drift Net	Set Net	Total
6/12-17	0	2	2	6/12-17	38	50	88
6/19-22	452	143	595	6/19-22	269	105	374
6/25	538	158	696	6/24-25	304	120	424
6/28-29	563	174	737	6/28-29	315	132	447
7/3	550	185	735	7/4	303	103	406
7/8	561	155	716	7/12-7/13	124	79	203
7/12-13	334	151	485	7/17-7/22	57	78	135
7/17-22	331	149	480				
7/24-29	28	38	66				
7/31-8/5	18	30	48				

Uzashik District				Nushagak District			
Period	Number			Period	Number		
	Drift Net	Set Net	Total		Drift Net	Set Net	Total
6/12-17	13	1	14	5/29-6/3	31	0	31
6/19-22	55	32	87	6/4/10	112	2	114
6/24-25	63	39	102	6/12-17	242	17	259
6/28-29	63	36	99	6/19-22	355	78	433
7/3	54	36	90	6/24-25	400	94	494
7/8	77	39	116	6/29	461	103	564
7/17-7/22	82	39	121	7/4-5	467	102	569
7/24-7/29	20	10	30	7/8-12 <u>2/</u>	296	21	317
7/31-8/5	17	9	26	7/12-16	400	122	522
				7/17-22	276	81	357
				7/24-29	133	68	201
				7/31-8/5	73	36	109
				8/7-12	57	25	82
				8/14-19	17	22	39
				8/21-26	6	2	8
				8/28-9/2	2	0	2

Togiak District			
Period	Number		
	Drift Net	Set Net	Total
6/12-16	40	3	43
6/19-23	99	5	104
6/26-30	99	7	106
7/3-7	125	5	130
7/11-13	111	4	115
7/17-22 <u>3/</u>	27	1	28
7/24-28	105	3	108
7/31-8/65	70	1	71
8/7-12	37	0	37
8/14-19	42	0	42
8/21-26	52	0	52
8/28-9/2	43	0	43
9/4-9	38	0	38

1/ Based on individual deliveries from fish ticket tabulations.

2/ Igushik section only.

3/ Osviak section only.

Table 4. Vessel Registration and Transfers
by District and Fishing Period, 1967

<u>NAKNEK-KVICHAK DISTRICT</u>		<u>EGEGIK DISTRICT</u>		<u>UGASHIK DISTRICT</u>	
<u>Period</u>	<u>No. Vessels</u>	<u>Period</u>	<u>No. Vessels</u>	<u>Period</u>	<u>No. Vessels</u>
Initial*	773	Initial*	341	Initial*	141
6/19-22	743	6/19-22	391	6/19-22	121
6/25	754	6/24-25	401	6/24-25	117
6/28-29	759	6/28-29	413	6/28-29	118
7/3	757	7/4	415	7/3	118
7/8	779	7/12-13	316	7/8	135
7/12-13	822	7/17-22	315	7/17-22	130
7/17-22	831				
7/24-29	829				

<u>NUSHAGAK DISTRICT</u>		<u>TOGIK DISTRICT</u>	
<u>Period</u>	<u>No. Vessels</u>	<u>Period</u>	<u>No. Vessels</u>
Initial*	607	Initial*	98
6/19-22	607	6/19-23	98
6/24-25	580	6/26-30	98
6/29	--	7/3-7	98
7/4-5	572	7/11-13	113
7/8-12 <u>1/</u>	572	7/17-22 <u>2/</u>	108
7/12-16	568	7/24-28	120
7/17-22	576		
7/24-29	566		

* District registration by license count at start of the season.

1/ Igushik section only open.

2/ Togiak section closed - Osviak section only open (does not reflect vessels in the Osviak section).

Table 5. Emergency Order Fishing Periods, 1967^{1/}

NAKNEK-KVICHAK DISTRICT				UGASHIK DISTRICT			
<u>Date & Time</u>		<u>Hours</u>		<u>Date & Time</u>		<u>Hours</u>	
June 20	12 MN - June 22	9 AM	33	June 20	12 MN - June 22	9 AM	33
June 25	12 N - June 25	12 MN	12	June 24	10 AM - June 25	10 AM	24
June 28	3 PM - June 29	3 AM	12	June 28	3 PM - June 29	3 AM	12
July 3	5 AM - July 3	5 PM	12	July 3	3 AM - July 3	5 PM	14
July 8	9 AM - July 8	9 PM	12	July 8	7 AM - July 8	9 PM	14
July 12	2 PM - July 13	9 AM	19				
TOTAL HOURS - 100				TOTAL HOURS - 97			

EGEGIK DISTRICT				NUSHAGAK DISTRICT			
<u>Date & Time</u>		<u>Hours</u>		<u>Date & Time</u>		<u>Hours</u>	
June 20	12 MN - June 22	9 AM	33	NUSHAGAK SECTION ONLY:			
June 24	10 AM - June 25	10 AM	24	June 20	12 MN - June 22	9 AM	33
June 28	2 PM - June 29	2 PM	24	June 24	12 N - June 25	12 N	24
July 4	6 AM - July 4	6 PM	12	June 29	6 AM - June 29	6 PM	12
July 12	2 PM - July 13	9 AM	19	July 4	8 AM - July 4	8 PM	12
TOTAL HOURS - 112				July 4	8 PM - July 5	8 AM	12
				IGUSHIK SECTION ONLY:			
				July 8	9 AM - July 12	4 PM	103
				NUSHAGAK DISTRICT			
				July 12	4 PM - July 13	9 AM	17
				July 13	9 AM - July 17	9 AM*	63
				TOTAL HOURS - 276			

* extension of 33 hours from 7/16 to 7/17 not included

TOGIK DISTRICT ^{2/}				
<u>Date & Time</u>		<u>Hours</u>		
June 19	9 AM - June 23	9 AM	96	^{2/} The Togiak River, Ungalikthluk, Nunavarchak and Kulukak sections were open for fishing 4 days a week except for a 24 hour closure, starting July 10, and a closure starting July 13 and extending to July 24. The Osviak and Matogak sections were open 5 days a week while the Cape Pierce section was open 7 days a week starting June 16.
June 26	9 AM - June 30	9 AM	96	
July 3	9 AM - June 7	9 AM	96	
July 11	9 AM - July 13	9 AM	48	
July 24	9 AM - July 28	9 AM	96	
July 31	9 AM - Aug. 5	9 AM	120	
Aug. 7	9 AM - Back on 5 day week			

^{1/} Emergency Order period extended from midnight, June 20 to midnight, July 15.

Table 6. Summary of Bristol Bay Red Salmon
Catch and Escapement, 1967^{1/}

	<u>Escapement</u>		<u>Catch</u>	<u>Total Run</u>
	<u>System</u>	<u>District</u>		
<u>NAKNEK-KVICHAK DISTRICT</u>				
Kvichak River	3,216,208			
Naknek River	755,640			
Alagnak River	202,626			
		4,174,474	2,337,226	6,511,700
<u>EGEGIK DISTRICT</u>				
		636,864	1,070,942	1,707,806
<u>UGASHIK DISTRICT</u>				
Ugashik Lakes	238,830			
Mother Goose System	5,100			
		243,930	163,744	407,674
<u>NUSHAGAK DISTRICT</u>				
Wood River	515,772			
Igushik River	281,772			
Snake River	11,000			
Tikchik Lakes	20,250			
Nush.-Mulchatna System	46,658			
		875,452	657,711	1,533,163
<u>TOGIAK DISTRICT</u>				
Togiak River	69,330			
Togiak Tributaries	12,000			
Kulukak System	10,000			
		91,330	101,107	192,437
TOTAL BRISTOL BAY		6,022,050	4,330,730	10,352,780

^{1/} Final catch and escapement data

Table 7. Summary of 1967 Bristol Bay
Red Salmon Escapement Goals

	<u>Predicted Run^{1/}</u>	<u>1967 Goal</u>	<u>Management Escapement Range</u>
<u>NAKNEK-KVICHAK DISTRICT</u>			
Kvichak River	3,993,000	3,500,000	3,000,000-5,000,000
Naknek River	2,564,000	1,000,000	150,000- 500,000
Alagnak (Branch) River	810,000	300,000	800,000-1,200,000
Total	7,367,000	4,800,000	3,950,000-6,700,000
<u>EGEGIK DISTRICT</u>	2,381,000	1,000,000	800,000-1,200,000
<u>UGASHIK DISTRICT^{2/}</u>	933,000	850,000	700,000-1,000,000
<u>NUSHAGAK DISTRICT</u>			
Wood River	2,484,000	1,100,000	800,000-1,200,000
Igushik River	153,000	153,000	50,000- 150,000
Snake River	77,000	77,000	30,000- 80,000
Nuyakuk River	128,000	80,000	50,000- 150,000
Nushagak-Mulchatna	46,000	40,000	30,000- 60,000
Total	2,888,000	1,450,000	960,000-1,640,000
<u>TOGIAK DISTRICT</u>			
Togiak River	180,000	90,000	70,000- 110,000
Togiak Tributaries	20,000 ^{3/}	10,000	5,000- 15,000
Kulukak System	15,000 ^{3/}	10,000	5,000- 15,000
Total	215,000	110,000	80,000- 140,000
TOTAL JOINT PREDICTION	13,749,000	8,210,000	6,490,000-10,680,000
TOTAL BAY PREDICTION	13,784,000		

^{1/} Bristol Bay Red Salmon Forecast of Run for 1967. Alaska Department of Fish and Game, Informational Leaflet 105; North side of Alaska Peninsula run not included.

^{2/} Excluding Mother Goose system run.

^{3/} System prediction by Alaska Department of Fish and Game; not included in joint Bristol Bay prediction.

Table 8. Catch by Species and Period,
Naknek-Kvichak District, 1967

Period	Hours	Reds	Kings	Chums	Pinks	Cohos	Chum % ^{2/}	Total
6/12-17		1,438	18					1,456
6/20-22	72 ^{1/}	227,070	1,087	4,370			1.9	232,527
6/25	12	384,216	530	3,521			.9	388,267
6/28-29	12	672,833	327	2,300			.3	675,460
7/3	12	504,667	340	5,712			1.1	510,719
7/8	12	219,598	170	8,795			3.9	228,563
7/12-13	19	182,925	475	20,857	. 2		10.2	204,259
7/17-22		127,457	535	16	9		+	128,017
7/24-29		9,670	99	408	3	137	4.0	10,317
7/31-8/5		7,352	124	3,627	6	1,038	33.0	12,147
Totals		2,337,226	3,705	49,606	20	1,175	2.1	2,391,732
Percent of District Catch		97.7	.2	2.1	+	+		100

^{1/} First Emergency Order period was a 33 hr. extension of the previous 39 hr. regular fishing period for a total of 72 continuous fishing hours.

^{2/} Based on catch sampling

Table 9. Catch by Species and Period,
Egegik District, 1967

Period	Hours	Reds	Kings	Chums	Pinks	Cohos	Chum % ^{2/}	Total
6/12-17		10,974	734	3			+	11,711
6/20-22	72 ^{1/}	212,315	640	853			.4	213,808
6/24-25	24	173,412	271	3,068			1.7	176,751
6/28-29	24	506,388	344	1,671			.3	508,403
7/4	12	116,911	206	181			.2	117,298
7/12-13	19	42,359	67	1,725			3.9	44,151
7/17-22		8,583	23	3,538			29.2	12,144
7/24-29						33		33
7/31-8/5						1,011		1,011
Totals		1,070,942	2,285	11,039		1,044	1.0	1,085,310
Percent of District Catch		98.7	.2	1.0		.1		100

^{1/} Represents 72 hours of continuous fishing

^{2/} Based on catch sampling

Table 10. Catch by Species and Period,
Ugashik District, 1967

Period	Hours	Reds	Kings	Chums	Pinks	Cohos	Chum % ^{2/}	Total
6/12-17		153	451	3			1.9	607
6/20-22	72 ^{1/}	22,420	400	777			3.3	23,597
6/24-25	24	28,439	260	588			2.0	29,287
6/28-29	12	32,874	100	502			1.5	33,476
7/3	14	20,384	63	1,688			7.6	22,135
7/8	14	29,490	66	3,675			11.1	33,231
7/17-22		26,134	161	2,884	.	4	9.9	29,183
7/24-29		3,418	63	3,148		41	47.9	6,670
7/31-8/5		432	18	839		1,856	66.0	3,145
8/7-12								
Totals		163,744	1,582	14,104		1,901	7.9	181,331
Percent of District Catch		90.3	.9	7.8		1.0		100

^{1/} Represents 72 hours of continuous fishing

^{2/} Based on cannery catch reports

Table 11. Catch by Species and Period
Nushagak District, 1967

Period	Hours	Reds	Kings	Chums	Pinks	Cohos	Chum % ^{2/}	Total
5/29-6/3	5 days	98	2,888					2,986
6/5-10	5 days	77	9,216					9,293
6/12-17	5 days	1,642	22,980	333	2		16.9	24,957
6/20-22	72 Hours ^{1/}	31,107	30,514	14,677	31		32.1	76,329
6/24-25	24	83,531	17,212	43,605	24		34.3	144,372
6/29	12	348,269	9,452	63,756	3		15.5	421,480
7/4-5	24	89,854	1,262	45,577	6		33.7	136,699
7/8-12 ^{3/}	103	13,074	86	2,045	42	1	13.5	15,248
7/12-15	80	68,910	2,118	146,621	76	72	68.0	217,797
7/16-22	6 days	12,564	329	20,590	62	757	62.1	34,302
7/24-29	5 days	8,430	131	563	8	3,886	6.3	13,018
7/31-8/5	5 days	78	43	491	7	20,441	86.3	21,060
8/7-12	5 days	77	9	28	4	3,529	26.7	3,647
8/14-19	5 days					1,763		1,763
8/21-26	5 days					840		840
8/28-9/2	6 days					228		228
Totals		657,711	96,240	338,286	265	31,517	34.0	1,124,019
Percent of District Catch		58.5	8.6	30.1	+	2.8		100

^{1/} Represents 72 hours of continuous fishing.

^{2/} Based on average chum percentage from cannery catch reports for drift catch, fish ticket tally for set catch.

^{3/} Igushik section only

Table 12. Catch by Species and Period
Togiak District, 1967^{1/}

Period	Hours	Reds	Kings	Chums	Pinks	Cohos	Chum % ^{2/}	Total
6/12-16	4 days	578	1,348	703	67		54.9	2,696
6/19-23	4 days	8,423	4,846	2,553	147		23.3	15,969
6/26-30	4 days	24,638	3,654	8,650	252		26.0	37,194
7/3-7	4 days	33,979	3,060	14,374	227		29.7	51,640
7/11-13	2 days	21,099	359	11,650	82		35.6	33,190
7/17-22 ^{3/}	5 days	2,022	28	5,296	31		72.4	7,377
7/24-28	4 days	7,337	58	14,590	15	6	66.5	22,006
7/31-8/5	5 days	2,687	26	4,496	7	91	62.6	7,307
8/7-12	5 days	313	2	946	1	243	75.1	1,505
8/14-19	5 days	31		64		2,314	67.4	2,409
8/21-26	5 days					5,579		5,579
8/28-9/2	5 days					5,305		5,305
9/4-9	5 days					4,621		4,621
Totals		101,107	13,381	63,322	829	18,159	38.5	196,798
Percent of District Catch		51.4	6.8	32.2	0.4	9.3		100

^{1/} Includes 357 Cape Pierce fish: 25 reds, 1 king, 329 chums, and 2 pinks.
Includes 21,422 Osviak fish: 5,191 reds, 208 kings, 15,813 chums, 3 cohos, and 207 pinks.
Includes 34,831 Kulukak fish: 24,379 reds, 850 kings, 9,388 chums, and 214 pinks.

^{2/} Based on cannery catch reports plus fish tickets.

^{3/} Osviak section only.

Table 13. Catch Summary, by District
And Species, 1967

District and Sub-District	Reds	Kings	Chums	Pinks	Cohos	Chum% ^{1/}	Total
<u>NAKNEK-KVICHAK</u>							
Kvichak	1,800,652						
Branch	66,732						
Naknek	469,842						
TOTAL	2,337,226	3,705	49,606	20	1,175	2.1	2,391,732
<u>EGEGIK</u>	1,070,942	2,285	11,039	-	1,044	1.0	1,085,310
<u>UGASHIK</u>	163,744	1,582	14,104	-	1,901	7.9	181,331
<u>NUSHAGAK</u>							
Wood	529,754						
Igushik	18,709						
Snake	-						
Nuyakuk	33,067						
Nush.-Mulchat.	76,181						
TOTAL	657,711	96,240	338,286	265	31,517	34.0	1,124,019
<u>TOGIAK</u>	101,107	13,381	63,322	829	18,159	38.5	196,798
TOTALS	4,330,730	117,193	476,357	1,114	53,796	9.9	4,979,190

^{1/} Based on combined reds and chums.

Species Percent of Season Total

Reds	87.0
Kings	2.3
Chums	9.6
Pinks	+
Cohos	1.1

Table 14. Catch by Type of Gear,
Red Salmon Only, 1967

District	Drift Net	Set Net	Total
Naknek-Kvichak	2,114,564 90.5%	222,662 9.5%	2,337,226 100.0%
Egegik	958,826 89.5%	112,116 10.5%	1,070,942 100.0%
Ugashik	132,576 81.0%	31,168 19.0%	163,744 100.0%
Nushagak	568,292 86.4%	89,419 13.6%	657,711 100.0%
Togiak	96,121 95.1%	4,986 4.9%	101,107 100.0%
TOTAL	3,870,379 89.4%	460,351 10.6%	4,330,730 100.0%

Table 15. Comparative Red Salmon Catch, by District,
1951-1967

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1951	2,926,413	644,551	318,629	436,950	-	4,326,543
1952	9,401,060	886,852	280,146	698,071	-	11,266,129
1953	3,738,839	1,234,600	688,720	449,341	-	6,111,500
1954	1,819,666	1,437,791	1,067,531	315,357	12,280	4,652,625
1955	2,564,341	622,885	240,817	1,054,978	66,085	4,549,106
1956	5,987,750	1,187,099	341,499	1,263,186	101,933	8,881,467
1957	4,578,643	814,459	350,858	491,498	40,044	6,275,502
1958	922,611	500,684	433,813	1,092,156	36,402	2,985,666
1959	1,689,425	662,391	423,414	1,719,687	113,202	4,608,119
1960	9,847,848	1,446,884	752,634	1,517,988	139,648	13,705,002
1961	8,166,983	2,686,076	357,223	511,483	192,161	11,913,926
1962	2,281,284	638,862	243,159	1,461,766	92,945	4,718,016
1963	957,902	695,582	188,695	842,744	186,213	2,871,136
1964	2,243,701	1,103,935	576,768	1,420,941	250,775	5,596,120
1965	19,139,567	3,179,559	925,690	793,323	217,100	24,255,239
1966	5,397,538	2,101,174	445,458	1,170,271	199,799	9,314,240
1967	2,337,226	1,070,942	163,744	657,711	101,107	4,330,730
17 Year Total	84,000,797	20,914,326	7,798,798	15,897,451	1,749,694	130,361,066
17 Year Ave.	4,941,223	1,230,254	458,753	935,144	124,978 ^{1/}	7,668,298

^{1/} 14 year average for Togiak district

Table 16. Comparative King Salmon Catch, By District,
1951 - 1967

Year	Naknek- Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1951	5,009	342	606	34,226	-	40,183
1952	11,404	972	632	39,848	-	52,856
1953	13,848	743	463	27,502	-	42,556
1954	7,101	9,777	1,093	38,045	-	56,016
1955	11,448	3,079	3,160	56,463	1,279	75,429
1956	6,006	1,448	616	57,441	866	66,377
1957	5,524	4,139	883	79,122	1,752	91,420
1958	8,391	3,155	2,368	87,245	2,048	103,207
1959	15,298	3,282	5,493	54,299	5,917	84,289
1960	17,778	2,991	2,209	81,416	7,309	111,703
1961	10,206	3,266	3,483	60,953	10,748	88,656
1962	8,816	2,070	2,929	61,283	8,949	84,047
1963	4,713	2,355	3,030	45,979	6,192	62,269
1964	12,902	3,618	3,694	108,606	10,716	139,536
1965	9,793	2,313	4,042	85,910	10,909	112,967
1966	5,456	1,949	1,916	58,184	9,967	77,472
1967	3,705	2,285	1,582	96,240	13,381	117,193
17 Year Total	157,398	47,784	38,199	1,072,762	90,033	1,406,176
17 Year Average	9,259	2,811	2,247	63,104	6,926	82,716

1/ 13 year average for Togiak District.

Table 17. Comparative Chum Salmon Catch by District,
1951 - 1967

Year	Naknek- Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1951	38,844	15,439	16,843	85,624	-	156,750
1952	93,835	18,060	19,651	117,875	-	249,421
1953	212,112	26,724	21,027	127,483	-	387,346
1954	138,016	62,040	39,384	159,852	1,352	400,644
1955	39,405	23,238	51,280	97,521	735	212,179
1956	93,841	16,713	6,934	172,546	25,483	315,517
1957	45,620	12,849	13,226	143,461	44,186	259,342
1958	119,324	12,089	12,714	193,688	20,277	358,092
1959	200,458	29,407	20,185	186,891	44,575	481,516
1960	304,286	62,837	51,415	642,099	255,320	1,315,957
1961	182,398	57,429	30,928	267,176	190,001	727,932
1962	176,712	23,053	22,040	290,633	165,107	677,545
1963	100,408	14,807	10,554	167,161	77,167	370,097
1964	153,644	23,496	30,688	463,309	131,371	802,508
1965	45,430	11,188	14,971	177,434	111,521	360,544
1966	57,273	32,085	29,100	129,344	95,410	343,212
1967	49,606	11,039	14,104	338,286	63,322	476,357
17 Year Total	2,051,212	452,493	405,044	3,760,383	1,225,827	7,894,959
17 Year Average	120,660	26,617	23,826	221,199	87,559	464,409

1/ 14 year average for Togiak District.

Table 18. Comparative Pink Salmon Catch, by District,
1951 - 1967

Year	Naknek- Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1951	11	-	-	23	-	34
1952	6,277	-	1,000	6,852	-	14,129
1953	7	2	-	3	-	12
1954	1,925	-	-	99,207	1,850	102,982
1955	-	-	-	9	-	9
1956	511	4	-	91,457	-	91,972
1957	2	24	-	3	-	29
1958	19,666	492	-	1,113,794	1,590	1,135,542
1959	25	6	78	137	55	301
1960	10,582	-	-	289,781	1,669	302,032
1961	42	3	-	248	245	538
1962	32,436	43	1	880,424	1,030	913,934
1963	56	1	2	226	176	461
1964	49,127	606	18	1,497,817	2,001	1,549,569
1965	514	-	-	95	91	700
1966	142,221	8	11	2,337,066	13,545	2,492,851
1967	20	-	-	265	829	1,114
8 Year Average ^{1/}	32,843	144	129	789,527	2,711 ^{2/}	825,354

^{1/} Includes only even years

^{2/} 7 year average for Togiak District

Table 19. Comparative Coho Salmon Catch, by District
1951 - 1967

Year	Naknek- Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1951	1,404	2,520	35,683	2,856	-	42,463
1952	11	-	2,936	2,067	-	5,014
1953	660	1,761	-	2,195	-	4,616
1954	111	2,932	70	20,423	-	23,536
1955	123	4,208	2,777	13,920	-	21,028
1956	887	8,573	-	53,999	-	63,459
1957	1,619	4,056	-	61,454	1,616	68,745
1958	3,624	4,370	746	127,088	-	135,828
1959	40	1,388	1,397	12,779	1,731	17,335
1960	197	2,421	-	13,457	65	16,140
1961	426	3,533	16	16,653	5	20,633
1962	2,474	3,828	4,553	28,418	11	39,284
1963	6,823	910	2,743	29,648	1,138	41,262
1964	3,133	775	380	26,416	5,859	36,563
1965	3,053	945	713	2,851	521	8,083
1966	4,096	1,932	533	11,517	15,864	33,942
1967	1,175	1,044	1,901	31,517	18,159	53,796
17 Year Total	29,856	45,196	54,448	457,258	44,969	631,727
17 Year Average	1,756	2,659	3,203	26,898	4,088 ^{1/}	37,160

^{1/} 11 year average for Togiak District

Table 20. Comparative Total Salmon Catch, by District,
All Species, 1951 - 1967

Year	Naknek- Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1951	2,971,681	662,852	371,761	559,679	-	4,565,973
1952	9,512,587	905,884	304,365	864,713	-	11,587,549
1953	3,965,466	1,263,830	710,210	606,524	-	6,546,030
1954	1,966,819	1,512,540	1,108,078	632,884	15,482	5,235,803
1955	2,615,317	653,410	298,034	1,222,891	68,099	4,857,751
1956	6,088,995	1,213,837	349,049	1,638,629	128,282	9,418,792
1957	4,631,408	835,527	364,967	775,538	87,598	6,695,038
1958	1,073,616	520,790	449,641	2,613,971	60,317	4,718,335
1959	1,905,246	696,474	450,567	1,973,793	165,480	5,191,560
1960	10,180,691	1,515,133	806,258	2,544,741	404,011	15,450,834
1961	8,360,055	2,750,307	391,650	856,513	393,160	12,751,685
1962	2,501,722	667,856	272,682	2,722,524	268,042	6,432,826
1963	1,069,902	713,631	205,024	1,085,758	270,956	3,345,271
1964	2,462,507	1,132,430	611,548	3,499,101	400,722	8,106,308
1965	19,198,357	3,194,005	945,416	1,059,613	340,142	24,737,533
1966	5,606,584	2,137,148	477,018	3,706,382	334,585	12,261,717
1967	2,391,732	1,085,310	181,331	1,124,019	196,798	4,979,190
17 year Total	86,502,685	21,460,964	8,297,599	27,487,273	3,133,674	146,882,195
17 year Average	5,088,393	1,262,410	488,094	1,616,898	223,834	8,640,129

1/ 14 year average for Togiak District

Table 21. Comparative Escapements by District,
Red Salmon, 1951-1967

Year	Naknek-Kvichak	Egegik	Ugashik ^{3/}	Nushagak	Togiak ^{4/}	Total
1951		950,000 ^{2/}	205,881	539,600	51,000	
1952	6,073,178 ^{1/}	756,921	651,209	433,800	102,000	8,017,108
1953	603,148	519,098	1,056,361	828,542	102,000	3,109,149
1954	1,040,167	507,298	458,635	691,624	77,000	2,774,724
1955	700,546	271,039	76,982	1,933,755	112,000	3,094,322
1956	11,999,913	1,104,268	425,295	1,212,101	225,000	14,966,577
1957	3,604,050	391,207	214,802	498,727	25,000	4,733,786
1958	907,553	246,354	279,546	1,277,933	72,000	2,783,386
1959	3,737,238	1,072,459	219,228	3,041,885	209,640	8,280,450
1960	16,698,911	1,798,764	2,341,400	1,673,258	192,010	22,704,343
1961	4,146,963	701,538	366,439	859,633	127,454	6,202,027
1962	3,394,580	1,027,482	274,026	937,698	71,552	5,705,338
1963	1,447,422	997,602	397,004	1,063,856	127,596	4,033,480
1964	2,555,424	849,576	482,770	1,339,004	114,674	5,341,448
1965	25,218,744	1,444,608	997,862	1,099,266	112,786	28,873,266
1966	4,965,965	804,246	714,836	1,630,726	122,998	8,238,771
1967	4,174,474	636,864	243,930	875,452	91,330	6,022,050
17 year Total	91,268,276	14,079,324	9,406,206	19,936,860	1,936,040	134,880,225
17 year Average	5,704,267	828,196	553,306	1,172,756	113,885	8,430,014

^{1/} 1952-1954 FRI Aerial Surveys, Unpub., 1952-1954 Naknek and Kvichak rivers only. Branch River included from 1955 on.

^{2/} Aerial INPFC Bulletin #10.

^{3/} Includes Mother Goose system beginning in 1960.

^{4/} 1951-1953 and 1956-1958 includes Togiak Lakes only. 1954-1955 includes only Ongiviniuk system and 1959 to date includes all Togiak tributaries. Kulukak system included 1961 to date.

Table 22. Comparative Red Salmon Escapement Counts by River System, 1961-1967

River	1961	1962	1963	1964	1965	1966	1967
Kvichok River	3,705,849	2,580,884	338,760	957,120	24,325,926	3,775,184	3,216,208
Branch River	90,036	90,630	203,304	248,700	175,020	174,336	202,626
Naknek River	351,078	723,066	905,358	1,349,604	717,798	1,016,445	755,640
Egegik River	701,538	1,027,482	997,602	849,576	1,444,608	804,246	636,864
Ugashik River	348,639	255,426	388,254	472,770	996,612	704,436	238,830
Mother Goose System	17,800 ^{1/}	18,600 ^{1/}	8,750 ^{1/}	10,000 ^{1/}	1,250 ^{1/}	10,400 ^{1/}	5,100 ^{1/}
Wood River	460,737	873,888	721,404	1,076,112	675,156	1,208,682	515,772
Igushik River	294,252	15,660	92,184	128,532	180,840	206,360	281,772
Snake River	4,856	1,760	37,960	12,436	12,000 ^{1/}	4,500 ^{1/}	11,000 ^{1/}
Nuyakuk River	79,788	37,890	166,608	103,224	203,070	161,010	20,250
Nushagak-Mulchatna System	20,000 ^{1/}	8,500 ^{1/}	45,700 ^{1/}	18,700 ^{1/}	28,200 ^{1/}	50,174	46,658
Togiak	95,454	47,352	102,396	95,574	88,386	91,098	69,330
Togiak Tributaries	26,800 ^{1/}	14,600 ^{1/}	13,800 ^{1/}	9,300 ^{1/}	8,100 ^{1/}	13,100 ^{1/}	12,000 ^{1/}
Kulukak System	5,200 ^{1/}	9,600 ^{1/}	11,400 ^{1/}	9,800 ^{1/}	16,300 ^{1/}	18,800 ^{1/}	10,000 ^{1/}
TOTAL ESCAPEMENT	6,202,027	5,705,338	4,033,480	5,341,448	28,873,266	8,238,771	6,022,050

^{1/} Aerial survey estimate

Table 23. Catch and Escapement of Red Salmon
In the Naknek-Kvichak District by River System, 1955-1967

Year	Escapement by River System				Catch	Total Run
	<u>Kvichak</u>	<u>Branch</u>	<u>Naknek</u>	<u>Total</u>		
1955	250,546	171,500	278,500	700,546	2,564,341	3,264,887
1956	9,443,318	784,000	1,772,595	11,999,913	5,987,750	17,987,663
1957	2,842,810	126,595	634,655	3,604,060	4,578,643	8,182,693
1958	534,785	94,650	278,118	907,553	922,611	1,830,164
1959	680,000	825,431	2,231,807	3,737,238	1,689,425	5,426,663
1960	14,630,000	1,240,530	828,381	16,698,911	9,847,848	26,546,759
1961	3,705,849	90,036	351,078	4,146,963	8,166,983	12,313,946
1962	2,580,884	90,630	723,066	3,394,580	2,281,284	5,675,864
1963	338,760	203,304	905,358	1,447,422	957,902	2,405,324
1964	957,120	248,700	1,349,604	2,555,424	2,243,701	4,799,125
1965	24,325,926	175,020	717,798	25,218,744	19,139,567	44,358,311
1966	3,775,184	174,336	1,016,445	4,965,965	5,397,538	10,363,503
1967	3,216,208	202,626	755,640	4,174,474	2,337,226	6,511,700
13 Yr. Total	67,281,390	4,427,358	11,843,045	83,551,793	66,114,819	149,666,612
13 Yr. Average	5,175,492	340,566	911,003	6,427,061	5,085,755	11,512,816

Table 24. Catch and Escapement by River System,
Egegik and Ugashik Districts, Red Salmon, 1951-1967

Year	Egegik District			Ugashik District			Catch	Total Run
	Escapement	Catch	Total Run	Escapement				
	<u>Egegik</u>			<u>Ugashik</u>	<u>Mother Goose</u>	<u>Total</u>		
1951	950,000	644,551	1,594,551	205,881	--	205,881	318,629	524,510
1952	756,921	886,852	1,643,773	651,209	--	651,209	280,146	931,355
1953	519,098	1,234,600	1,753,698	1,056,361	--	1,056,361	688,720	1,745,081
1954	507,298	1,437,791	1,945,089	458,635	--	458,635	1,067,531	1,526,166
1955	271,039	622,885	893,924	76,982	--	76,982	240,817	317,799
1956	1,104,268	1,187,099	2,291,367	425,295	--	425,295	341,499	766,794
1957	391,207	814,459	1,205,666	214,802	--	214,802	350,858	565,660
1958	246,354	500,684	747,038	279,546	--	279,546	433,813	713,359
1959	1,072,459	662,391	1,734,850	219,228	--	219,228	423,414	642,642
1960	1,798,764	1,446,884	3,245,648	2,304,200	37,200 ^{2/}	2,341,400	752,634	3,094,034
1961	701,538	2,686,076	3,387,614	348,639	17,800	366,439	357,223	723,662
1962	1,027,482	638,862	1,666,344	255,426	18,600	274,026	243,159	517,185
1963	997,602	695,582	1,693,184	388,254	8,750	397,004	188,695	585,699
1964	849,576	1,103,935	1,953,511	472,770	10,000	482,770	576,768	1,059,538
1965	1,444,603	3,179,559	4,624,167	996,612	1,250	997,862	925,690	1,923,552
1966	804,246	2,101,174	2,905,420	704,436	10,400	714,836	445,458	1,160,294
1967	636,864	1,070,942	1,707,806	238,830	5,100	243,930	163,744	407,674
17 Yr. Average	828,196	1,230,254	2,058,450	546,889	13,638	553,306	458,753	1,012,059
17 Yr. Total	14,079,324	20,914,326	34,993,650	9,297,106	109,100	9,406,206	7,798,798	17,205,004

^{1/} Aerial survey estimate 1951; weir count 1952-56; tower count 1957-67.

^{2/} Aerial survey 1960-67.

Table 25 . Catch and Escapement of Red Salmon,
in the Nushagak District by River System, 1951-1967.

Year	Escapement by River System						Catch	Total Run
	<u>Wood</u>	<u>Igushik</u>	<u>Snake</u>	<u>Nuyakuk</u>	<u>Nushagak- Mulchatna</u>	<u>Total</u>		
1951	457,600	40,000	3,000	39,000	--	539,600	436,950	976,550
1952	226,800	150,000	4,000	38,000	15,000	433,800	698,071	1,131,871
1953	515,542	100,000	4,000	189,000	20,000	828,542	449,341	1,277,883
1954	570,624	80,000	4,000	29,000	8,000	691,624	315,357	1,006,981
1955	1,382,755	500,000	30,000	16,000	5,000	1,933,755	1,054,978	2,988,733
1956	773,101	400,000	4,000	30,000	5,000	1,212,101	1,263,186	2,475,287
1957	288,727	130,000	3,000	67,000	10,000	498,727	491,498	990,225
1958	960,455	107,478	9,000	196,000	5,000	1,277,933	1,092,156	2,370,089
1959	2,209,266	643,808	139,950	48,861	--	3,041,885	1,719,687	4,761,572
1960	1,016,073	495,087	16,598	145,500	--	1,673,258	1,517,988	3,191,246
1961	460,737	294,252	4,856	79,788	20,000	859,633	511,483	1,371,116
1962	873,838	15,660	1,760	37,890	8,500	937,698	1,461,766	2,399,464
1963	721,404	92,184	37,960	166,608	45,700	1,063,856	842,744	1,906,600
1964	1,076,112	128,532	12,436	103,224	18,700	1,339,004	1,420,941	2,759,945
1965	675,156	180,840	12,000	203,070	28,200	1,099,266	793,323	1,892,589
1966	1,208,682	206,360	4,500	161,010	50,174	1,630,726	1,170,271	2,800,997
1967	515,772	281,772	11,000	20,250	46,658	875,452	657,711	1,533,163
17 Yr. Average	8,195,702	226,234	17,768	92,365	20,424	1,172,756	935,144	2,107,901
17 Yr. Total	13,932,694	3,845,973	302,060	1,570,201	285,932	19,936,860	15,897,451	35,834,311

Table 26. Catch and Escapement of Red Salmon
in the Togiak District by River System, 1951-1967

Year	Escapement by River System				Catch	Total Run
	<u>Togiak</u>	<u>Tributaries</u>	<u>Kulukak</u>	<u>Total</u>		
1951 ^{1/}	51,000	--	--	51,000	--	51,000
1952	102,000	--	--	102,000	--	102,000
1953	102,000	--	--	102,000	--	102,000
1954	57,000	20,000	--	77,000	12,280	89,280
1955	104,000	8,000	--	112,000	66,085	178,085
1956	225,000	--	--	225,000	101,933	326,933
1957	25,000	--	--	25,000	40,044	65,044
1958	72,000	--	--	72,000	36,402	108,402
1959	178,740	30,900	--	209,640	113,202	322,842
1960	162,810	29,200	--	192,010	139,648	331,658
1961	95,454	26,800	5,200	127,454	192,161	319,615
1962	47,352	14,600	9,600	71,552	92,945	164,497
1963	102,396	13,800	11,400	127,596	186,213	313,809
1964	95,574	9,300	9,800	114,674	250,775	365,449
1965	88,386	8,100	16,300	112,786	217,100	329,886
1966	91,098	13,100	18,800	122,998	199,799	322,797
1967	69,330	12,000	10,000	91,330	101,107	192,437
17 Yr. Average	98,185	16,891	11,585	113,885	124,978	216,807
17 Yr. Total	1,669,140	185,800	81,100	1,936,040	1,749,694	3,685,734

^{1/} Aerial or foot surveys 1951-1958. Tower counts started 1959 on Togiak River. Kulukak and tributaries all aerial surveys.

Table 27. Total Inshore Runs, by District,
Red Salmon, 1951-1967

Year	Catch and Escapement by District					Total Run Bristol Bay
	<u>Naknek-Kvichak</u>	<u>Egegik</u>	<u>Ugashik</u>	<u>Nushagak</u>	<u>Togiak</u>	
1951	--	1,594,551	524,510	976,550	51,000	--
1952	15,474,238 ^{1/}	1,643,773	931,355	1,131,871	102,000	--
1953	4,341,987	1,753,698	1,745,081	1,277,883	102,000	--
1954	2,859,833	1,945,089	1,526,166	1,006,981	89,280	--
1955	3,264,887	893,924	317,799	2,988,733	178,085	7,643,428
1956	17,987,663	2,291,367	766,794	2,475,287	326,933	23,848,044
1957	8,182,693	1,205,666	565,660	990,225	65,044	11,009,288
1958	1,830,164	747,038	713,359	2,370,089	108,402	5,769,052
1959	5,426,663	1,734,850	642,642	4,761,572	322,842	12,888,569
1960	26,546,759	3,245,648	3,094,034	3,191,246	331,658	36,409,345
1961	12,313,946	3,387,614	723,662	1,371,116	319,615	18,115,983
1962	5,675,864	1,666,344	517,185	2,399,464	164,497	10,423,354
1963	2,405,324	1,693,184	585,699	1,906,600	313,809	6,904,662
1964	4,799,125	1,953,511	1,059,538	2,759,945	365,449	10,937,568
1965	44,358,311	4,624,167	1,923,552	1,892,589	329,886	53,128,505
1966	10,363,503	2,905,420	1,160,294	2,800,997	322,797	17,553,011
1967	6,511,700	1,707,806	407,674	1,533,163	192,437	10,352,780
17 Yr. Average	1,077,142	2,058,450	1,012,059	2,107,901	216,808	17,306,430
17 Yr. Total	172,342,660	34,993,650	17,205,004	35,834,311	3,685,734	224,983,589

^{1/} 1952-54 Branch River escapement not included.

^{2/} 13 year average.

Table 28. Comparative Inshore and High Seas
Catches and Total Bristol Bay Runs, 1955-1967
Red Salmon (in millions)

Year	Bristol Bay Catch	Japanese Catch of Bristol Bay Red Salmon ^{1/}	Total Catch	Bristol Bay Escapement	Bristol Bay Total Run ^{4/}	% Japanese Catch of Total Catch	% Japanese Catch of Total Bristol Bay Run
1955	4.549	1.869 ^{2/}	6.418	2.923	9.341	29.1	20.0
1956	8.881	2.812	11.693	14.183	25.876	24.0	10.9
1957	6.276	9.736	16.012	4.734	20.746	60.8	46.9
1958	2.986	1.356	4.342	2.783	7.125	31.2	19.0
1959	4.608	1.221	5.829	8.280	14.109	20.9	8.7
1960	13.705	5.193	18.898	22.704	41.602	27.5	12.5
1961	11.914	7.389	19.303	6.202	25.505	38.3	29.0
1962	4.718	1.375	6.093	5.705	11.798	22.6	11.7
1963	2.871	1.287	4.158	4.033	8.191	31.0	15.7
1964	5.596	1.447	7.043	5.341	12.384	20.5	11.7
1965	24.255	8.001	32.256	28.873	61.129	24.8	13.1
1966	9.314	2.787	12.101	8.239	20.340	23.0	13.7
1967	4.331	1.737 ^{3/}	6.068	6.017	12.085	28.6	14.4
Total	104.004	46.210	150.214	120.017	270.231	373.8	227.3
Average	8.000	3.555	11.555	9.232	20.787	28.8	17.5

^{1/} Includes immature red salmon caught in previous year.

^{2/} Includes only mature salmon caught in 1955

^{3/} Preliminary data recorded from revised Bristol Bay high seas catch areas.

^{4/} Includes Bristol Bay catch, Japanese catch, and Bristol Bay escapement.

Table 29. Japanese High Seas Catches of Red Salmon
of Bristol Bay Origin (In Thousands of Fish)

Year	Matures ^{1/}	Immatures ^{2/}	Total
1952	367	34	401
1953	406	0	406
1954	600	0	600
1955	1,869	60	1,929
1956	2,752	2,076	4,828
1957	7,660	342	8,002
1958	1,014	151	1,165
1959	1,070	1,185	2,255
1960	4,008	968	4,976
1961	6,421	62	6,483
1962	1,313	271	1,584
1963	1,016	829	1,845
1964	618	1,836	2,454
1965	6,165	739	6,904
1966	2,048	737	2,785
1967 ^{3/}	1,000	600	1,600

^{1/} Includes the May and June 1-10 catches east of 170° E, the June 11-20 catches east of 175° E, and the June 21-30 catches east of 180°.

^{2/} Includes red salmon taken on high seas at times and in areas where immature Bristol Bay reds are in large majority. These are mostly .2 age fish that otherwise would be expected to mature and return to Bristol Bay as .3's. Includes July and August catches east of 170°, and June 21-30 catches between 175° E and 180°.

^{3/} Preliminary catches from revised Bristol Bay high seas catch areas.

Table 30. Case Pack by Species
Bristol Bay 1951 - 1967

Year	Reds	Kings	48 1-lb. cans per case		Coho	Total
			Chums	Pinks		
1951	309,936	4,661	15,744	0	4,366	334,707
1952	715,083	11,380	31,457	1,339	793	760,052
1953	445,535	8,050	37,052	3	333	490,973
1954	308,405	9,266	32,232	4,732	2,839	357,474
1955	312,284	13,089	20,701	0	1,928	348,002
1956	529,726	9,386	24,450	3,918	4,133	571,613
1957	471,979	16,285	23,940	0	4,220	516,424
1958	241,099	24,844	34,954	61,740	10,555	373,192
1959	332,713	17,364	42,812	0	2,582	395,471
1960	854,807	19,566	103,569	12,055	3,073	993,070
1961	926,441	15,501	51,828	0	1,980	995,750
1962	361,226	16,767	58,571	38,638	2,941	478,173
1963	217,901	9,495	34,157	2	4,296	265,851
1964	372,928	25,677	70,523	67,431	5,024	541,583
1965	1,447,771	24,248	31,826	0	338	1,504,183
1966	737,948	14,850	28,814	95,071	2,345	879,028
1967 ^{1/}	334,366	19,556	45,445	8	3,358	402,733
<hr/>						
17 year Total	8,920,148	259,985	688,075	284,924	55,104	10,208,379
17 year Average	524,715	15,293	40,475	35,585 ^{2/}	3,241	600,493

^{1/} Preliminary data

^{2/} Average pink case pack includes even years only

Table 31. Fish per Case, by Species
Bristol Bay 1951 - 1967*

Year	Reds	Kings	Chums	Pinks	Cohos
1951	11.87	4.53	10.87	18.16	10.29
1952	13.69	5.12	10.34	13.37	10.57
1953	11.91	5.22	10.16	23.09	10.30
1954	12.04	4.79	10.26	18.47	10.69
1955	12.77	4.13	9.84	-	11.17
1956	12.91	4.15	11.50	20.93	12.64
1957	11.79	3.81	10.21	-	-
1958	12.30	4.20	9.40	18.20	12.80
1959	12.80	4.10	11.40	23.00	7.80
1960	14.58	6.19	12.58	17.27	11.34
1961	11.93	4.43	11.25	19.19	7.39
1962	12.45	4.66	11.47	25.80	12.10
1963	12.15	5.49	11.36	-	12.21
1964	13.57	5.31	11.01	25.58	12.58
1965	15.75	4.28	12.31	-	9.08
1966	12.62	5.22	11.91	26.22	14.47
1967 ^{1/}	12.95	5.99	10.48	-	16.02
<hr/>					
17 year Total	21,808	8,162	18,635	16,584	53,796
17 year Average	12.82	4.80	10.96	20.73 ^{2/}	11.12 ^{3/}

^{1/} Preliminary

^{2/} Average fish per case includes even years only; 8 year average

^{3/} 16 year average

(*) Mesh size changed to 5-3/8 inches in 1962, previously 5 1/2 inches

Table 32. Frozen and Cured Fish
Bristol Bay 1961 - 1967
(numbers of fish)

Year	Reds	Kings	Chums	Pinks	Cohos	Total
1961	170,745	11,585	348	-	-	182,678
1962	27,926	4,510	2,665	-	4,073	39,174
1963	34,641	3,917	11,690	1	4,028	54,277
1964	80,787	9,011	3,295	276	8,956	102,325
1965	85,728	3,506	15	-	2,476	91,725
1966	44,118	1,928	4,794	4	15,430	66,274
1967	33,838	20,571	9,475	-	12,535	76,419
7 year Total	477,783	55,028	32,282	-	47,498	612,872
7 year Average	68,255	7,861	4,612	-	7,916 ^{1/}	87,553

^{1/} 6 year average

Table 33. Bristol Bay Fish Prices
by Species, 1960-1967^{1/}
(price per fish)

Species	Year							
	1960	1961	1962	1963	1964	1964	1966	1967
<u>Independent Fishermen</u>								
Reds	.95	1.00	1.04	1.08	1.09	1.09	1.13	1.18
Kings, Large	3.50	3.68	3.75	3.75	3.75	3.75	3.87	3.87
Med.	1.75	1.84	1.87	1.87	1.87	1.87	1.94	1.94
Small	--	1.00	1.00	1.00	1.00	1.00	1.00	1.03
Chums	.51	.54	.56	.58	.58	.58	.60	.60
Pinks	.29	.30	.31	.32	.32	.32	.33	.33
Cohos	.95	1.00	1.04	1.08	1.09	1.09	1.13	1.18
<u>Company Fishermen</u>								
Reds	.58	.62	.64	.67	.67	.67	.70	.73
Kings, Large	2.53	2.66	2.70	2.70	2.70	2.70	2.40	2.78
Med. (2 for 1	2 for 1	2 for 1	2 for 1	2 for 1	2 for 1	1.20	1.39
Small(.64	.69
Chums	.33	.34	.36	.37	.37	.37	.37	.37
Pinks	.16	--	--	--	--	--	.20	.17
Cohos	.58	.62	.64	.67	.67	.67	.70	.73

^{1/} Prices rounded to nearest hundred

Table 34. Average Red Salmon Weights,
Catch and Escapement, 1963-1967^{1/}

District	1963		1964		1965		1966		1967	
	No.	Avg. Wt.	No.	Avg. Wt.	No.	Avg. Wt.	No.	Avg. Wt.	No.	Avg. Wt.
<u>CATCH</u>										
Naknek/Kvichak	284	6.7	300	5.2	582	4.5	134	6.1	542	5.9
Egegik	209	6.5	300	5.8	225	4.7	294	6.3	187	6.2
Ugashik	105	6.3	300	5.3	321	5.2	102	6.6	237	6.4
Nushagak	411	5.9	5,218	6.6	-	-	361	6.5	376	5.9
Togiak	-	-	2,218	6.5	1,394	6.0	1,157	7.0	266	7.0
<u>ESCAPEMENT</u>										
Kvichak	-	-			211	4.2	-	-	-	-
Egegik	-	-			200	4.5	-	-	-	-
Ugashik	-	-			200	4.5	-	-	-	-
Naknek	-	-	300	4.4	2,768	4.8	-	-	-	-
Branch	-	-	46	5.7	483	4.8	-	-	-	-
Nushagak	-	-								
Wood R.	-	-	1,866	4.8	211	5.5	-	-	-	-
Igushik R.	-	-	549	6.2	236	6.5	-	-	-	-
Snake R.	-	-	69	5.9	86	6.4	-	-	-	-
Buyakuk R.	-	-	300	5.2	418	6.5	-	-	-	-
Togiak R.	-	-	270	6.2	205	6.2	-	-	-	-

^{1/} Unweighted arithmetic averages, except for 1967 which was weighted by age composition

Table 35. Average round weight of king, chum, pink, and coho salmon in the commercial catch, Nushagak and Togiak districts 1964-1967^{1/}

NUSHAGAK DISTRICT		
<u>King Salmon</u>	<u>No. Sampled</u>	<u>Avg. Weight</u>
1964	258	14.7
1965	347	20.1
1966	796	18.3
1967	971	21.0
<u>Chum Salmon</u>		
1965	74	6.1
1966	44	8.6
1967	447	6.6
<u>Pink Salmon</u>		
1964	225	3.2
1966	299	3.1
<u>Coho Salmon</u>		
1964	39	6.8
1966	399	7.5
1967	473	7.0
TOGIAC DISTRICT		
<u>King Salmon</u>		
1964	39	15.9
1965	257	21.8
1966	147	20.7
1967	32	21.3
<u>Chum Salmon</u>		
1964	14	7.0
1965	188	6.8
1966	442	7.5
1967	265	7.0

^{1/} Unweighted arithmetic averages

Table 36. Age Composition of Red Salmon Catch
and Escapement Combined, Bristol Bay, 1967

Age Group	Percent by District					Total Bristol Bay
	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	
3 ₁ 0.2	--	--	--	0.11	0.06	0.02
3 ₂ 1.1	0.22	0.03	0.10	0.04	0.06	0.15
4 ₁ 0.3	0.01	0.03	--	1.84	1.05	0.30
4 ₂ 1.2	5.32	0.82	2.97	47.38	24.01	11.06
4 ₃ 2.1	0.18	0.10	0.03	0.06	0.01	0.14
5 ₁ 0.4	--	--	--	0.10	0.06	0.02
5 ₂ 1.3	6.45	3.60	28.68	40.73	59.76	12.91
5 ₃ 2.2	69.60	50.15	41.46	7.44	2.85	54.84
6 ₂ 1.4	0.04	0.06	0.23	0.14	0.40	0.08
6 ₃ 2.3	17.99	41.13	26.37	2.16	11.65	19.67
6 ₄ 3.2	0.07	1.45	0.03	--	--	0.29
7 ₃ 2.4	0.01	0.01	0.06	--	0.08	0.01
7 ₄ 3.3	0.11	2.62	0.07	--	0.01	0.51
Total	100.0	100.0	100.0	100.0	100.0	100.0

Table 37 . Sex Composition of Bristol Bay
Red Salmon Run, 1967

DISTRICT	Percent		Number of Fish		
	Males	Females	Males	Females	Total
<u>NAKNEK-KVICHAK</u>					
Kvichak R. Escapement	53.35	46.65	1,647,822	1,568,386	3,216,208
Branch R. Escapement	47.66	52.34	96,572	106,054	202,626
Naknek R. Escapement	47.66	52.34	355,095	400,545	755,640
Naknek-Kvichak Catch	47.23	52.77	1,084,746	1,252,480	2,337,226
System Total	48.90	51.10	3,184,235	3,327,465	6,511,700
<u>EGEGIK</u>					
Egegik R. Escapement	46.94	53.06	297,907	338,957	636,864
Egegik Catch	42.62	57.38	417,175	653,767	1,070,942
System Total	41.87	58.13	715,082	992,724	1,707,806
<u>UGASHIK</u>					
Ugashik R. Escapement	42.96	57.04	102,610	136,220	238,830
Ugashik Catch	44.37	55.63	72,647	91,097	163,744
System Total	43.53	56.47	175,257	227,317	402,574
<u>NUSHAGAK</u>					
Wood R. Escapement	41.41	58.59	218,363	297,409	515,772
Igushik R. Escapement	46.28	53.72	131,108	150,664	281,772
Nuyekuk R. Escapement	40.11	59.89	8,122	12,128	20,250
Nushagak Catch	43.87	56.13	275,694	363,308	639,002
Igushik Catch	40.78	59.22	7,630	11,079	18,709
System Total	43.44	56.56	640,917	834,588	1,475,505 ^{1/}
<u>TOGIAK</u>					
Togiak R. Escapement	43.96	56.04	30,350	38,980	69,330
Togiak Catch	35.69	64.31	35,273	65,834	101,107
System Total	38.50	61.50	65,623	104,814	170,437
<u>BRISTOL BAY</u>					
Escapement	48.64	51.36	2,887,949	3,049,343	5,937,292
Catch	43.73	56.27	1,885,535	2,426,486	4,312,021
Total	46.57	53.43	4,773,484	5,475,829	10,249,313

^{1/} Snake River and Nushagak-Nulchamna escapement of 57,658 not included.

Table 38. Red Salmon Smolt Data, Kvichak River System, 1955-1967

Year of Seaward Migration	Age I		Age II		24 Hour ^{1/} Index Points	Index ^{2/} Net Catch
	Percent	Mean Length in mm	Percent	Mean Length in mm		
1955	7.3	89.0	92.7	109.0	7.8	259,978
1956	39.2	92.0	60.8	116.0	2.3	77,660
1957	72.3	96.0	27.7	120.0	0.9	30,907
1958	97.9	84.0	2.1	114.0	100.0	3,333,953
1959	2.9	80.0	97.1	99.0	85.9	2,863,876
1960	10.0	91.0	90.0	108.0	18.4	614,003
1961	72.2	91.8	27.8	117.2	1.1	36,164
1962	94.0	82.0	6.0	110.0	36.1	1,203,000
1963	2.7	83.3	97.3	98.3	126.9	4,229,431
1964	22.0	87.0	78.0	108.0	61.8	2,061,586
1965	3.6	90.0	96.4	108.9	54.4	1,812,555
1966	91.0	94.0	9.0	114.0	8.3	275,761
1967	92.8	86.4	7.2	118.3	92.6	3,088,742
Average	46.8	88.2	53.2	110.8	45.9	1,529,817

^{1/} One index point = 33,340 smolts

^{2/} For derivation of 24-hour index catch figures refer to: Pennoyer and Seibel, 1965. 1964 Kvichak River Red Salmon Smolt Studies, Alaska Department of Fish and Game Informational Leaflet No. 58.

Table 39. Red Salmon Smolt Data,
Naknek River System, 1955-1967*

Year of Seaward Migration	Age I ^{1/}		Age II ^{2/}		Outmigration Estimate
	Percent	Mean Length in mm	Percent	Mean Length in mm	
1956	84.4	94.0	15.6	103.0	6,000,000
1957	57.9	111.0	42.1	112.0	3,040,416
1958	96.4	91.0	3.6	114.0	10,060,200
1959	80.5	97.0	19.5	106.0	12,465,487
1960	53.1	99.0	46.6	109.0	6,691,377
1961	77.8	103.0	22.2	113.0	5,612,647
1962	48.6	105.0	51.4	112.0	16,462,216
1963	40.6	98.0	58.5	114.0	14,900,855
1964	31.1	97.0	68.8	110.0	7,228,339
1965	59.6	99.0	40.0	114.0	24,708,672
1966	33.8	101.0	66.2	112.0	9,212,910
1967	43.5	113.0	56.2	119.0	9,407,200
Average	58.9 ^{2/}	100.7	40.9 ^{2/}	111.5	10,482,527

*Age and length weighted by night's catch

^{1/} Number winters in freshwater

^{2/} Age III smolt amounted to 0.3% in 1960; 0.9% in 1963; 0.1% in 1964;
0.4% in 1965; 0.3% in 1967

Table 40. Red Salmon Smolt Data,
Ugashik River System, 1951-1967*

Year of Seaward Migration	Age I ^{1/}		Age II ^{1/}		Index ^{3/} Points	Index ^{4/} Net Catch	Outmigration Estimate
	%	Mean Length in mm	%	Mean Length in mm			
1956	11.0	--	89.0	--	--	--	--
1957	4.0	--	96.0	--	--	--	--
1958 ^{2/}	98.1	93.0	1.9	112.0	100.0	301,232	11,659,905
1959	87.3	90.0	12.7	120.0	36.5	109,982	2,887,002
1960	59.7	90.0	39.3 ^{5/}	108.0	75.1	226,317	5,503,646
1961	20.4	90.0	79.6	112.0	52.3	157,441	3,802,079
1962	80.7	88.0	19.3	112.0	103.1	310,616	16,692,089
1963	46.3	89.8	53.7 ^{5/}	104.3	305.2	919,451	33,750,496
1964	80.1	92.2	19.8 ^{5/}	118.3	68.1	205,145	9,990,048
1965	28.8	93.7	71.2	114.1	57.4	172,893	3,640,115
1966	--	--	--	--	--	--	--
1967	52.5	87.5	47.5	113.1	30.9	93,068	5,137,063
Average	51.7	90.5	48.2	112.6	92.1	277,349	10,340,271

* Age and length weighted by index net catch

^{1/} Number winters in freshwater

^{2/} Base year: assigned value of 100.0

^{3/} One index point = 3,012.32 smolts

^{4/} Three hour index period, 10 p.m. to 1 a.m.

^{5/} 1.0 percent Age III in 1960; 0.1 percent Age III in 1963 and 1964

Source of Data

Fisheries Research Institute, University of Washington, 1956-1957

U. S. Bureau of Commercial Fisheries, 1958-1962

Alaska Department of Fish and Game, Division of Commercial Fisheries,
Bristol Bay, 1963-1967

Table 41. Red Salmon Smolt Data,
Wood River System, 1951-1967*

Year of Seaward Migration	Age I ^{1/}		Age II ^{1/}		Index Points ^{3/}		Two Hour Index Net Catch
	Percent	Mean Length	Percent	Mean Length	Unadjusted	Adjusted	
1951	80.0	91.0	20.0	--	9.9	9.9	16,809
1952 ^{2/}	99.0	87.0	1.0	--	100.0	100.0	170,034
1953	95.3	86.0	4.7	103.0	296.1	296.1	503,444
1954	95.8	87.0	4.2	107.0	438.6	438.6	745,832
1955	98.0	85.0	2.0	102.0	221.7	221.7	377,032
1956	78.4	82.0	21.6	95.0	329.3	326.6	559,932
1957	80.7	77.0	19.3	93.0	144.0	165.5	244,831
1958	65.0	82.0	35.0	102.0	249.1	230.9	423,580
1959	93.5	87.9	6.5	105.0	59.1	60.5	100,450
1960	99.4	88.0	0.6	114.0	223.3	223.3	379,668
1961	93.0	81.7	7.0	102.1	518.7	518.7	881,911
1962	86.0	80.1	14.0	97.6	177.6	177.6	301,892
1963	84.3	82.6	15.7	102.1	88.9	88.9	151,206
1964	98.8	83.7	1.2	104.2	568.6	332.2	966,807
1965	92.0	85.5	8.0	106.1	217.7	296.2	370,112
1966	94.3	77.1	5.7	101.2	147.1	133.4	250,049
1967	60.4	77.7	39.6	89.9	242.8 ^{4/}	--	412,867 ^{4/}
Average	87.9	83.6	11.4	101.6	237.2	226.3	403,321

* Age and length weighted by index net catch

^{1/} Number winters in freshwater

^{2/} One index point = 1,700.34 smolt

^{3/} Two hour index period, 9 to 11 p.m.

^{4/} Based on average index net catch from June 16 through June 27 for 1951-1966

Table 42. Commercial Freshwater Fisheries Catch
Tikchik and Naknek Lake Systems of Bristol Bay
1967 ^{1/}

PERIOD	WHITEFISH		LAKE TROUT		BURBOT		CHAR		PIKE		SUCKER		TOTAL	
	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.
Month	TIKCHIK LAKE SYSTEM													
March	233	932	130	650	11	33	2	10	1	15			377	1,640
April	93	372	80	400	4	12							177	784
TOTALS	326	1,304	210	1,050	15	45	2	10	1	15			554	2,424
% Comp.	58.8		37.9		2.7		0.4		0.2				100.0	
Avg. Wt.	4.0		5.0		3.0		5.0		15.0					
	NAKNEK LAKE SYSTEM													
May	137	647	74	530	3	12	8	39	1	10			223	1,238
June	44	231	26	173			3	12					73	416
July	28	92					19	130	1	8			48	230
August	82	299	4	23	1	3	3	17			1	3	91	345
October	39	106	118	840	95	452	6	39	10	58			268	1,495
November	10	46	11	94	4	18	1	5	2	14			28	177
TOTALS	340	1,421	233	1,660	103	485	40	242	14	90	1	3	731	3,901
% Comp.	46.5		31.9		14.1		5.5		1.9		0.1		100.0	
Avg. Wt.	4.2		7.1		4.7		6.1		6.4		3.0			

^{1/} Round weight to nearest tenth of a pound.

Table 43. Commercial Catch of Herring in pounds
by date, Togiak District, 1967

<u>Date</u>	<u>Herring Catch in Pounds</u>	<u>No. Fishermen</u>	<u>Average Catch</u>
May 15	24,288	14	1,735
16	56,394	15	3,760
17	51,710	19	2,722
18	35,370	19	1,862
19	17,440	12	1,453
20	28,735	9	3,193
22	340	1	340
23	22,170	4	5,543
25	10,355	3	3,452
27	<u>22,100</u>	4	<u>5,525</u>
Totals	268,902	Average	2,959

Table 44. Bristol Bay Fishery Operators,
by District, 1967^{1/}

Name of Operator	Location	No. Lines	Comments
<u>Naknek-Kvichak District</u>			
Alaska Packers Assoc.	South Naknek	3 - 1 lb. tall 1 - 3/4 lb. 1 - 1/2 lb.	
Bering Sea Processors	South Naknek	1 - 4 lb. 1 - 1 lb. tall 1 - 1/2 lb.	
Bumble Bee Seafoods	South Naknek	3 - 1 lb. tall 1 - 1/2 lb. 1 - 1/4 lb.	
Nakat Packing Corp.	Nakeen	3 - 1 lb. tall 1 - 1/2 lb.	Did not operate in 1967
Nelbro Packing Co.	Naknek	1 - 1 lb. tall 2 - 1/2 lb. 1 - 1/4 lb.	
New England Fish Co.	Peterson Point	3 - 1 lb. tall	
Peter Pan Seafoods	Naknek	None	Fish transported to False Pass for canning
Red Salmon Co.	Naknek	4 - 1 lb. tall	
<u>Ugashik District</u>			
Alaska Packers Assoc.	Ugashik & Pilot Pt.	None	Non-operating canneries
Briggs-Way Co.	Ugashik	1/2 lb. glass jars	Hand pack
Mickie Jones	Pilot Point	Freezer ships	M/V Brown Bear M/V Polar Bear

Continued Next Page

Table 44. Continued

Name of Operator	Location	No. Lines	Comments
<u>Egegik District</u>			
Alaska Packers Assoc.	Egegik	3 - 1 lb. tall	Did not operate in 1967
Bristol Bay Processors	"	None	Saltery
Clark Fishing & Packing	"	None	Saltery
Columbia Wards Fisheries	"	None	Non-operating cannery
Egegik	"	1 - 1 lb.	Did not operate in 1967
Kayak Packing Co. (joint operation)	Big Creek	1 - 1 lb.	M/V Kayak
D & M Packing, Inc.	"	1 - 1/2 lb.	M/V Bering
W. A. Peterson Co.	Egegik	1 - 1/2 lb.	
<u>Togiak District</u>			
Red Salmon Co.	Naknek		Fish transported to Naknek for canning
Togiak Fisheries, Inc.	Togiak	1 - 1/2 lb. 1 - 1/4 lb.	

Continued Next Page

Table 44. Continued

Name of Operator	Location	No.	Lines	Comments	
<u>Nushagak District</u>					
Alaska Freshwater Fish.	Dillingham	None		Fresh-smoked	
Alaska Packers Assoc.	Clark's Pt.	None		Non-operating cannery	
Alaskan Smokey Joes, Inc.	Dillingham	None		Fresh	
Columbia Wards Fisheries	Ekuk	3 - 1 lb. tall 1 - 1/2 lb.			
Gurtler, R. E.	Dillingham	None		Saltery	
Northern Products Co.	Nushagak Bay.	Fresh		M/V Christian	
Pacific Alaska Fisheries (joint operation)	Dillingham	2 - 1 lb. tall			
New England Fish Co.	Dillingham	1 - 1/2 lb.			
Seapack	Nushagak Bay	Freezer ship		M/V Teddy	
Queen Fisheries, Inc.	Combine Slough	1 - 4 lb. 2 - 1/2 lb. 1 - 1/4 lb.			
<hr/>					
Total available lines:	<u>4 lb.</u> 2	<u>1 lb.</u> 28	<u>3/4 lb.</u> 1	<u>1/2 lb.</u> 13	<u>1/4 lb.</u> 4
Total operating lines:	2	18	1	11	4

1/ Indicates only operators with a physical plant or processing facility in a district. Most non-operating canneries are utilized as fishing bases, and several more companies may be represented with fishing effort in districts than indicated.